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ERRATA ET ADDENDA.

Page 351, note ‖, *for* "p. 124" *read* "p. 62."
,, 352, line 2, *for* "Van Goen" *read* "Van Goens."
,, 353, note ‡, *for* "Norasa" *read* "Novasa."
,, 358, note *, *for* "p. 123" *read* "p. 62."
,, 358, note †, *for* "p. 126" *read* "p. 63."
,, 359, line 30, *for* "Taylor" *read* "Tylor."
,, 359, note *, *omit* "Die omfánge der cultur übers."
,, 359, note †, *for* "Taylor" *read* "Tylor."
,, 359, note †, *for* "Spang" *read* "Spangel."
,, 368, note †, *for* "Zuitf." *read* "Zeits. für" *passim.*
,, 378, note *, *for* "Mokna" *read* "Mokua."
,, 381, line 2, *for* "Ḙlu" *read* "Eḷu."
,, 381, note *, *for* "p. 104" *read* "p. 61."
,, 384, line 12, *for* "κολορα" *read* "κολοβὰ."
,, 387, last line, *after* "precipices" *insert* "(λιθίνοις σπηλαίοις)."
,, 388, line 16, *for* "Zvortvan berwe beandend," &c., *read* "Zwart van verwe, brandend," &c.
,, 394, line 6, *after* "Skull No. 1" *insert* "(Table I.)."
,, 394, line 11, *for* "Dewilané" *read* "Denilane."
,, 398, line 13, *for* "Busle" *read* "Busk."
,, 398, line 14, *for* "two last" *read* "last two."
,, 398, line 31, *after* "Museum," *insert* "(Table I., Fig. 3)."
,, 399, line 21, *for* "Weleker" *read* "Welcker."
,, 402, line 11, *for* "*occipitale*" *read* "*occipitalis.*"
,, 404, line 10, *for* "76" *read* "7·6."
,, 404, line 12, *after* "skull" *insert* "(Flower, No. 683)."
,, 406, line 16, *for* "chamæprosopous" *read* "chamæprosopic."
,, 406, line 29, *after* "skull," *insert* "(No. 675)."
,, 406, line 35, *for* "alreolar" *read* "alveolar."
,, 406, line 36, *for* "basilar alvesli" length *read* "basi-alveolar length."
,, 407, line 2, *for* "basinasel" *read* "basinasal."
,, 409, line 2, *for* "Bernard" *read* "Barnard."
,, 411, line 18, *for* "von" *read* "van."
,, 411, line 19, *for* "vrijser ruf tig" *read* "vrij vernuftig."
,, 411, note *, *for* "Tambulus" *read* "Jambulus."

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ROYAL ASIATIC SOCIETY,

CEYLON BRANCH.

THE VẸDDÁS OF CEYLON, AND THEIR RELATION TO THE NEIGHBOURING TRIBES.

By Professor R. Virchow.

Translated for the Ceylon Asiatic Society from the Memoirs of the Royal Academy of Science of Berlin, 1881.

In the various mixture of races inhabiting the Island of Ceylon, the Vẹddás (Vaeddas, Weddas, Veddahs, Vaddahs, Vaidahs, Beddas, Bedas) have since a long time been an object of special prominence for the study of ethnography, because, owing to an inferior order of intellectual development, and through defects in physical organisation, it offers the most room for conjecture that here is presented a remnant of the aboriginal inhabitants. And now, when according to all accounts their number is so rapidly diminishing that at no very distant date its last members will have disappeared from among the living, it adds peculiar interest to the study that it is desirable to transmit to posterity at least a trustworthy picture of its singular characteristics. For this the material we now have is nowise sufficient: hence the task for the following disquisition is not merely to collect what has been already arrived at, but to point out the gaps which can be supplied only by farther local researches. It is to be hoped that this may stimulate to the immediate application of all possible means to obtain the wanting material.

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The Vęddás have dwelt—at least for some centuries—in one district in the eastern, or more correctly, south-eastern part of the Island. Robert Knox, who gave the first exact information regarding them in the year 1681, transferred them to the woods of "Bintan" (Bintęnne).* John Davy† in the early part of this century speaks of them as inhabiting the vast forests on the south-east side of the Island, between the mountains and the sea, especially the wild, unhealthy tracts of land called *Vędiraṭa* of Bintęnna and *Mahavędiraṭa* of U'va. These they consider as their own territories. On the whole their boundaries remain the same to-day. Sir E. Tennent‡ and Mr. Bertram F. Hartshorne§ assert that the Vęddá-land is about ninety English miles in length and forty in breadth, from the hills of U'va and Mędamahanuwara toward the east and extending to the sea coast, while Mr. Pridham,|| who estimates the area at very nearly 1,500 square miles (English), bounds it more precisely in the following way: Batticaloa on the east, the districts of Mágampattu and U'va on the south, the mountains of Kandy on the west and south-west, and the river Mahavęli-gaṇga on the north. Mr. John Bailey¶ states that the majority of the real Vęddás dwelt in the districts of Batticaloa and Badulla (chiefly in the former); but here it should be said that according to a later division of the country a part of Bintęnna has been added to the district of Badulla, and the larger portion of it

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* Robert Knox. An Historical Relation of the Island of Ceylon in the East Indies. London, 1681, p. 61. New edition, printed in Philalethes. The History of Ceylon from the earliest period to the year MDCCCXV. London, 1817.

† John Davy. An Account of the Interior of Ceylon and of its Inhabitants, with Travels in that Island. London, 1821, pp. 115, 116.

‡ Sir James Emerson Tennent. Ceylon: an Account of the Island, Physical, Historical, and Topographical. London, 1859, vol. II., p. 437.

§ Hartshorne, in the *Fortnightly Review*. London, 1876. New series, vol. XIX.

|| Charles Pridham. An Historical, Political, and Statistical Account of Ceylon and its Dependencies. London, 1849, vol. I., p. 452.

¶ John Bailey, in Transactions of the Ethnological Society. London, 1863. New series, vol. II., p. 278.

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to the district of Batticaloa.* The more savage remnant of the tribe live in the beautiful province of Nilgala and in the forests of Bintenna.

There is much evidence, however, that in times not very distant the Veddás were scattered over a much larger extent of territory. The name "Veddá-land" (*Vedirata*) in the time of Mr. Bailey (1863) belonged to extensive districts in the north-east of the Kandy mountains, which were no longer inhabited by the Veddás, but by the Sinhalese (Wanniyas). The designation *Mahavedirata* ("Great Veddá-land") seems of pretty wide application. Davy, who in one place transfers it to U'va, in another† gives it to the far-reaching flat lands in which the so-called "lake" of Bintenna lies. Mr. Pridham, who indeed was never himself in Ceylon, places *Mahavedirata* in Wellassé and a part of U'va. These are subordinate matters, however. More important far are several earlier statements. Cordiner‡ tells us, after mentioning the real Veddás, that "another race of a similar description formerly existed in the district of the Wanny, bordering on the province of Jaffnapatam. They are now, in some degree, civilised." They spoke Malabar, and adhered to the Brahmin religion. In another place he says§ that at the advent of the Portuguese the "Bedahs" dwelt in the north and the Sinhalese in the south. This seems to prove that the Veddás formerly reached much farther northward. But their earlier presence in the south and even south-west is also proved. Knox‖ tells us that at "Hourly," a remote possession of the king of Kandy, numerous Veddás were living, who were, however, pretty tame; and Valentijn¶ mentions, besides "Vintana" and "Hoerli," still another

* Bailey, *l. c.*, p. 281, note.

† Davy, *l. c.*, p. 377.

‡ James Cordiner. A Description of Ceylon. London, 1807, vol. I., p. 91.

§ *Id.*, p. 137.

‖ Knox, p. 124.

¶ François Valentijn. Oud en Nieuw Oost Indie. Dordr. en Amsterdam, 1726. Deel V. Ceylon, p. 49.

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"Beda" district, farther north than Trincomalee. Bergk, the translator of Percival's work,* says that Van Goen states the "Bedahs" had entire possession of the land between the mountains of "Canducarre" in the west and Passara in the north; while Percival counts† as belonging to them not only the Indians in the adjoining province of Jaffnapatam, but the tribes inhabiting the western and south-western part of the Island between Adam's Peak and the Rayigam and Pasdum kóralés.

In regard to these statements, I remark that Bergk's view of the situation of the district mentioned is erroneous, as a glance at the map by A. Arrowsmith,‡ contained in the book he translated, would have taught him. The district of "Canducarre" (according likewise to the map of Ceylon published by J. Mawman, 1816, which is appended to the new edition of Knox) lies at the east of the Island, S.S.W. from Batticaloa, as well as the immediately adjoining district of Passara, which is a province of U'va directly north of it, and close to Badulla.§ From this the country between "Canducarre" and Passara would be the real Vęddá territory, whereas the Rayigam and Pasdum kóralés lie on the west coast south of Colombo, in the neighbourhood of Saffragam and south-west of Adam's Peak.

Mr. Bailey,|| in whose time indeed there were no longer any Vęddás living there, conjectures that Saffragam (from its old name *Habaragamuwa*) was the original land of the Vęddás (*habara*, "barbarian"), and as proof of this gives a variety of local names still extant. He also finds in a Siṇhalese poem, written about four hundred years ago, *Parawi*

* Robert Percival. Description of the Island of Ceylon, translated by J. A. Bergk. Leipsic, 1803, p. 337, remarks.

† Robert Percival. An Account of the Island of Ceylon, containing its History, Geography, Natural History, with the Manners and Customs of its various Inhabitants. Second edition, London, 1805, pp. 282–284.

‡ The map in Tennent's work is by John Arrowsmith.

§ Davy, *l. c.*, p. 413. Pridham, *l. c.*, I., p. 361.

|| Bailey, *l. c.*, p. 313, note.

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Sandése, the district right below Adam's Peak distinctly inhabited by Vẹddás. Possibly only some scattered remnants of the tribe dwelt among these mountains.

That four hundred years ago the Vẹddá territory extended continuously in this way as far as the west side of the mountains, and even to the western sea coast, is highly improbable, as a Chinese geographer, Hiouen Thsang, in the seventh century of our era, travelling in India states that the Yakkhos had* withdrawn into the south-east corner of Ceylon. It may, however, be correct that as Sir E. Tennent asserts, under the Dutch Government Vẹddás were found in large numbers, but half civilised, at no great distance north of the peninsula of Jaffna, in the so-called Wanni. The question whether in the earliest ages Vẹddás inhabited the whole Island I will take up later.

The present Vẹddá-land is very lovely, embracing a comparatively flat, wooded country, nowhere raised more than two hundred feet above the level of the sea, but frequently having the appearance of a park. It would seem that the character of the soil varies, since dams and unwholesome marshes alternate with rock-ribbed hills. The Rev. Mr. Gillings† speaks of the province of Bintẹnna as very dry and rocky. But Mr. Frederick Müller‡ is mistaken in transferring the home of the Vẹddás to the mountains of Ceylon. All the more recent accounts limit their abodes to the anterior land which separates the central mountains from the sea coast, excluding them wholly from the mountains themselves. Sir Emerson Tennent§ to be sure makes a distinction between the somewhat more civilised village and coast tribes, and the wild "Rock Veddahs, *galle-vedda.*"

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* Tennent, *l. c.*, I., p. 372, note.

† The Journal of the Ceylon Branch of the Royal Asiatic Society. Colombo, 1853, p. 89.

‡ Reise der östere. Fregatte Norasa. Anthropologischer Theil. Abth. III. Ethnographie. Wien, 1868, s. 139.

§ Tennent, *l. c.*, II., pp. 439–44.

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If we reject his attempt to identify these with an ancient tribe of "Gallas," who may have dwelt in the same portions of the south as the present Galle, and admit that the rocky character of the region in which the wildest part of the tribe live accounts for the name, evidently given them by strangers, it does not by any means follow that the rock Vęddás are mountaineers. For centuries the real inhabitants of the mountains have been Siŋhalese, the people of *Máyárața*. Sir E. Tennent established the rock Vęddás, who, according to him, had split into five clans or hunting-parties in the woods of Bintęnna, and whilst the village Vęddás, amounting at the highest estimate to not more than one hundred and forty families, lived in nine small communities around the Laguna district of Batticaloa, the coast Vęddás, four or five hundred in number, roamed about in the jungles between Batticaloa and Trincomalee, chiefly in the vicinity of Erávúr and along the coast as far as Vendeloos Bay. Mr. Hartshorne, however, rejects this division wholly; he distinguishes only *Kęlę́-Vęddó* (jungle Vęddás) and *Gaņ-Vęddó* (half-civilised village Vęddás), the former only as deserving the special attention of ethnologists.

If we study the map of Ceylon, it becomes at once clear that Bintęnna, the ancient capital, which Sir E. Tennent speaks of as identical with the *Maagrammum* of Ptolemy,* lies directly upon the eastern boundary of the mountains towards the foreland. The Maháwęli-gaŋga, the largest river of the Island, here bursts out from the hill-country, behind which the mountains of Kandy and U'va rise westward; to the east are fertile plains, swamp lands, and

* Tennent, *l. c.*, I., p. 536, note 2. This he rests on the old name of Bintęnna having been Mahiyangana, and asserts that this could not possibly mean Mahagan, as was assumed by Christ. Lassen. (*De Taprobane insula veteribus cognita. Diss. pro aditu, muneris prof. ordin. Bonnae, 1842*, p. 23.)

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extensive forests, interspersed with low hills. Sir E. Tennent* paints in rich colours this beautiful country, which he passed through on his way from Bintenna to Batticaloa on the east coast. This is the real home of the Veddás. Knox† also describes very distinctly this country,—this land of Bintenna,—which he surveyed from afar on the tops of the mountains. He says: "It seems to be smooth land, and not much hilly; the great river runneth through the midst of it. It is all over covered with mighty woods and abundance of deer; but much subject to dry weather and sickness. In these woods is a sort of wild people inhabiting." The wild Veddás live here in perfect isolation, as well from their allophylen neighbours as their more civilised tribal brethren, without fixed abodes, but yet upon their own recognised lands, mostly in small groups, or simply in families. Rarely do they venture beyond their own boundaries, and then only for the purpose of exchanging honey, wax, skins, or venison for tools of iron (axes, arrow-points, &c.). For the most part they shrink timidly back from all human contact, and even their small commerce was not at first openly pursued,‡ but in

* Tennent, *l. c.*, II., p. 451.

† Knox, *l. c.*, p. 9.

‡ Mr. Hartshorne asserts that this mysterious way which Sir Emerson Tennent made so much of is no longer carried on. The first mention of it is by Knox. Earlier authors, in speaking of the secret trade, refer, as far as I can see, not merely to the Veddás, but to the Ceylonese in general. It does not appear to me at all certain that the passage in Pliny (Natur. Hist. Lib., VI., 24), in spite of Sir E. Tennent's plea (*l. c.*, I., p. 571, note 1), refers to the Ceylonese, as it does not describe the trade in the interior of the country, but outside, near the boundary of the Serae,—far away upon the continent,—exhibiting it more as a peculiarity of the Serae than of the Ceylonese. The interpretation put upon the passage is of little importance, however, as Chinese authors—for instance, Fa Hiaen—mention this kind of secret trade in the third century as carried on upon the Island itself. That Pliny at the same time refers to the worship of demons certainly would seem to point to the Veddás, but on the other hand a report by the Arabic geographer Albyruni (1030 A. D.) shows that in his time the secret trade was pursued along the coast. We should therefore have to assume that the Veddás carried on a coast trade in the eleventh century, which is not probable.

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this wise: they deposited their wares and rough models of the things they wanted in a certain place, and returned later to take away secretly the needed articles. This explains why the estimates of their present number vary so much.

Cordiner says, most indefinitely, "not many thousands in number"; whilst Sir Emerson Tennent,* in the year 1859, considered the estimate at that time of 8,000 an exaggerated one. Mr. Bailey, in 1863, declared the number of the Vęddás in the district of Batticaloa to be only about 250, in Nilgala 72 (in 1858), and in Bintęnna 364 (in 1856),—altogether only about 686. Mr. Hartshorne speaks of these figures as probably too small; and a communication from the Rev. Mr. Gillings† seems to corroborate this, according to which, by the census of 1849, in the district of Bintęnna alone there was a population in all of 1,538 persons,—half-Siŋhalese, half-Vęddás. At any rate, from the declarations of Mr. Bailey there is no question that the recruits are very small indeed, and the annihilation of the entire tribe imminent. For he found‡ in Nilgala among 72 persons, 50 adults and 22 children (in one family of 9, and another of 8 adults, only 1 child in each); and among the 50 adults but 14 over fifty years of age; a single member only seemed to be over seventy years of age. Of 308 persons in Bintęnna, 175 were adults and 133 children; in an isolated horde 22 adults and 4 children. And as if to make this more conclusive, we are assured that there are no indications anywhere of the practice of child-murder among them.

Of late the process of annihilation seems to have hastened on. From a note of the Rev. Somanader, a missionary in Batticaloa, which I received through the kindness of the Director of the Museum in Colombo, Mr. A. Haly, we are led to think there are scarcely any pure blooded Vęddás living; he calls them "a race almost entirely extinct."

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* Tennent, *l. c.*, II., p. 444. † Gillings, *l. c.*, p. 83.
‡ Bailey, *l. c.*, p. 296.

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Whether this assertion applies to a particular district or is universal, and whether the extinction has been hurried on by a general dying out or through intermarriages with other tribes, I have not been able to discover from the information given me. We can do little more at this distance than to hold together what has been furnished us by observers, who had opportunities of intercourse with living Vẹddás in their own home. Among these we must name above all, Dr. Davy, Sir Emerson Tennent, the Rev. Mr. Gillings, Mr. Bailey, and Mr. Hartshorne. But we encounter at the outset a peculiar obstacle, viz.: that each fresh writer designates the statements of his predecessor as "incorrect." Mr. Bailey* criticises Sir Emerson Tennent in the severest manner, and Mr. Hartshorne,† who on this point agrees with him also, calls in question the accuracy of Mr. Bailey's statements.

Yet Mr. Bailey was many long years in Ceylon. First, as a member of the Government in the district of Badulla, and later as Principal Assistant Colonial Secretary of Ceylon, affording him sufficient opportunity to study the Vẹddás. He puts great emphasis on the fact, and reiterates it frequently, that his statements are sustained by well-tested and often repeated personal observations. It appears to me that the contradiction between Messrs. Bailey and Hartshorne is not in reality so great as the latter pictures it. I find

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* Bailey, *l. c.*, p. 279, note. "His [Tennent's] account of them is in some important instances defective, and even inaccurate. He glances casually at those tribes which are in the wildest state, touching with precision none of their peculiarities, and dwells in detail upon those only who from long association with the Singalese and Tamil races have lost much of their originality. Of the ancient aborigines he has compiled much that is curious. Of the existing Veddahs he has given us little besides an epitome of former notices."

† Hartshorne, *l. c.* "They have been described by Sir Emerson Tennent and by Mr. Bailey; but interesting as their accounts are, the latter has suffered grievously from misprints, and the value of the former is impaired by the circumstance that its materials were not the fruit of original research."

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that in the space of more than twenty years which intervenes between the two accounts, the effects of educating influences pressing in from all sides upon a before almost isolated people is very noticeable, and explains in the most natural way how certain habits and customs disappear, and others come in. I am therefore inclined to value more highly the testimony of the older observer for his time, than the younger observer is inclined to warrant. But I believe I must defend their distinguished predecessor, Sir Emerson Tennent, against them both. His representations bear throughout the character of great soberness and objectivity; and his facts differ in the main points very little indeed from those of his successors, especially the more immediate one. We cannot in justice deny that he was the first to throw light on this subject.

For all this it is very dangerous under such circumstances to decide, at our distance, where the mistakes are, and what is to be accepted as true; and nought remains but to confine ourselves to such changes as can be clearly traced and followed in their development, or to matters about which the various observers agree. Fortunately there is enough to disclose to us the main characteristics of the people. The greatest difficulty here arises from the fact that not a few of the travellers who have treated the subject of the Vẹddás—notwithstanding a long residence in the Island—have never personally seen any of them, and speak only from hearsay; and others certainly have not encountered the really wild families. Even Knox,* who never saw a single Vẹddá, and yet furnishes a likeness of one, distinguishes a "tamer sort," who lived under a kind of subjection to the king of Kandy, and a "wilder," who were called "*Ramba-Vaddahs.*"† Davy,‡ who divides them into village and forest Vẹddás, seems only to have seen the former, yet feels justified in assuming from the information he received that both

* Knox, *l. c.*, p. 123. † *Id.*, p. 126. ‡ Davy, *l. c.*, pp. 116, 118.

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belong to the same race. In this all later observers entirely agree. Hence, for the study of their physical condition we may without hesitation unite the two groups, so far as they are not already united ; but for the observation of their social and psychical conditions we must hold the two groups strictly apart : of course in the latter respect only are the forest or jungle Vẹddás of any interest to us. I shall therefore speak mainly of them ; nevertheless we may not venture quite to set aside the village Vẹddás, since their actual settlement and civilisation has succeeded only very imperfectly as yet.

As a matter of fact, all attempts to bring the Vẹddás into fixed abodes and to raise them to a higher culture have suffered shipwreck in far greater measure than the efforts to civilise the Australians. Government officials and missionaries have been active among them many years, but their success has been wholly external. Rev. Mr. Gillings states that up to 1844, in Bintẹnna, 163 men, 48 women, and 85 children had been baptised—since then very few ; and adds, "but almost all of these have gone back again to their former habits and follies : what they formerly heard they have forgotten." The Vẹddás have remained on the whole nomadic heathens, and heathens without any developed form of religion. "They are a horde of 'Free-thinkers,'" said Wolf,* "following the impulses of their bad and savage natures." Whether they actually have any conceptions of God or God-like beings is, to say the least, very doubtful. The only thing that is proved is a lower kind of demon worship among them, which here and there assumes the form of a worship of their ancestors. If Mr. Taylor† designates this as *animismus*, and therefore "their religion," as corresponding to that of the barbarous tribes of India, we

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* Joh. Chr. Wolf. Reise nach Zeilon. Berlin u Stettin, 1782. Th. I. S. Die omfânge der cultur übers.

† Edward B. Taylor. The Beginning of Culture. Translated by Spang u Poske. Leipsic, 1873. Bd. I. S., 51.

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at least must not overlook the fact that it is also close upon the borders of Nihilism. Gillings says they believe the souls of their departed relations to be devils, who have power to hurt them, and therefore they perform ceremonies to them at regular seasons, and especially when they are sick. Bailey and Hartshorne described these matters in detail.

The former* distinguishes the conditions as they were in Bintęnna from those of the more barbarous inhabitants of Nilgala. There, he says, they had mourned and buried their dead for a long time; here they had only just begun to do so. Formerly they threw their dead into the jungle,† or left them just where they died. After covering the body with leaves they laid a heavy stone upon the breast, and sought for themselves another cavern, giving up the one where death had entered to the spirit of the departed. This spirit (*yakun*) watches over the welfare of those left behind. The spirits therefore of their ancestors, like those of children, are good spirits (*néhya yakun*); they come to their relatives when they are ill, visit them in dreams, and grant them flesh of the chase. In every trouble the Vęddás invoke these spirits, especially the spirits of children (*bilindu yakun* or *vitera yakun*). Among their ancestors the great grandmother (*mahakiriammá*) seems to have occupied the first place, although Mr. Bailey is not quite sure whether this distinction is to be understood in the good sense. The spirits are invoked with dance and song, around an arrow, which is planted upright (*Maha kiri amma*).

The description given of all this by Sir E. Tennent‡

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* Bailey, *l. c.*, pp. 296–301. † Davy, *l. c.*, p. 117.

‡ "When sick, they send for the devil dancers to drive away the evil spirit who is believed to inflict the disease. The dance is executed in front of an offering of something eatable, placed on a tripod of sticks, the dancer having his head and girdle decorated with green leaves. At first he shuffles with his feet to a plaintive air, but by degrees he works himself into a state of great excitement and action, accompanied by moans and screams, and during this paroxysm he professes to be inspired with instructions for the cure of the patient." (Tennent, II., p. 442.)

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almost reminds one of the customs of the Schamanen. Sometimes, while preparing for the chase, the spirit is promised a piece of flesh of the slain animal. At other times they cook something and put it in the dry bed of a river or other obscure place, invoke the souls of the departed, dance round the food, and perform their incantations.

Sir E. Tennent also reports that the dead were not buried, but simply covered over with shrubs and leaves in the jungle. On the other hand the Secretary of the Ceylon Branch of the Royal Asiatic Society* (1853) tells of their wrapping the dead in mats and burying them; and Mr. Hartshorne† knows of no other practice than burying. When a person is dead they envelop him in the skin of an animal, and dig a grave for him with their axes or pointed sticks. Women are not allowed to be present. No weapons or utensils of any kind are buried with him, and once closed over they never visit the grave again. To the spirit of the departed one, who has now become a yakká, an offering is brought in the following way: While invoking the spirit they roast the flesh of the *wandurá* (monkey) or the *talagoyá* (iguana) with honey and edible roots, and distribute it among those present, who eat it on the spot. The word *yakko*, or *yakkho*, designates, according to Turnour,‡ a kind of demon, though the demon worshippers are also called Yakkhos and Yakkhinis. He derives it from the root *yaja*, "to bring offerings." This word has for a long time justly excited the attention of scientists, since in the great historical work of Ceylon, the Maháwaŋso, the earliest inhabitants of the Island are called by this name.

When Wijayo, the founder of the first known Ceylon dynasty, in the year of Gotama Buddha's death, 543 B.C., landed, as is generally assumed, upon the

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* Journal of the Royal Asiatic Society, Ceylon Branch, 1853, p. 89.

† Hartshorne, *l. c.*

‡ The Maháwaŋso, edited by George Turnour. Ceylon, 1837, vol. I., Index and Glossary, p. 30.

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north-west coast, not far from Puttaḷam,* he found an already organised Yakkho state :† indeed, it is related of Gotama Buddha himself that he came to Laṅká,‡ a settlement of the Yakkhos. It would hardly be allowable to conclude from this, with Sir Emerson Tennent§ and others, that the people of the north-west coast, to whom the name of Yakkhos was given, were identical with the present Vęddás, and that up to the time of Wijayo an aboriginal homogeneous race inhabited the Island ; but it may not be a mistake to assume that in the earliest period almost the entire population were devoted to this *yakkho* worship, as it now exists among the Vęddás, and is to be found only among them ; for the Siŋhalese are Buddhists, the Moors and the greater number of the Tamils being Muhammadans.

One fact also speaks against the whole Island having been inhabited by Vęddás: that the legends tell of kings, princesses, and cities (for instance, Laṅkápura) of the Yakkhos, whilst no trace of all these is to be found among the Vęddás of modern times. As they have no God, no priests, no temple, so they make shift to get on without a king, without chiefs, and without cities, even without houses. At least this is true of the wilder portion of them. We should have to assume such deep degeneration of the present Vęddás, from the old Yakkho times, as would be without a parallel in history as well as in ethnology. Even for those who, like myself, acknowledge the possibility of a deep mental and physical degradation of whole tribes, it would yet be going very far to admit that a tribe which

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* Mr. Brodie (Journal Royal Asiatic Society, Ceylon Branch, 1853, p. 48) states that the place where the first settlement was made (Tambapanni), now called Tammena Aḍaviya, lies about six or eight English miles east of Puttaḷam. The word Tambapanni is derived from the Greek name for the Island, Taprobane. Tennent, *l. c.*, vol. I., p. 525, note I.

† Maháwaŋso, pp. 48, 49.

‡ *Id.*, p. 2. Laṅká filled by Yakkhos, and therefore the settlement of the Yakkhos. Laṅká is an old name of Ceylon.

§ Tennent, *l. c.*, II., p. 438.

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had never changed its ground, and was living in the immediate vicinity of comparatively highly civilised tribes, could in a little more than two thousand years have sunk so low. Farther accounts will certainly prove that the question of the deterioration of the Vẹddás is not to be evaded; but I must here declare that I cannot bring myself to admit their possible decline from an organised Yakkho state.

Not a single fact sustains the conjecture that Wijayo, with his followers from the Valley of the Ganges, was the first stranger who came to Ceylon. On the contrary, the legend of the advent of Gotama Buddha clearly points to earlier arrivals. This is done no less by the old traditions of the Rámáyaṇa. Lassen* declared outright that in the legend of Ráma we must see the reminiscence of a former attempt to colonise this Island by immigrants from India. The north-west coast of Ceylon lies so near the coast of Coromandel, and the vicinity of Adam's Bridge having always been (then as well as later) the landing place for intruders from Hindústán, it would be astonishing if the first immigration at such a remote period should immediately have become a fixed fact in history. If Wijayo found some kind of political organisation on the Island, we may assume that before him there had been an invasion of other tribes, and the time in which the whole north of the great Island was Vẹddá land must then be placed a good deal further back. In historic times one irruption after another from the north and west occurred, and the aborigines were driven toward the south and east. But of these aborigines we must say that only a part of them have preserved in its purity the original type.

The first visit of Gotama Buddha to the Island was, according to the Maháwaṇso,† at Mahiyangana. This place, to be sure, is found right in the present Vẹddá land near Bintẹnna,

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* Christian Lassen. Indische Alterthumskünde. Bonn, 1847. Bd. I. S., 198.

† Maháwaṇso, p. 3, cap. I.; Introduction, p. xxiv; Glossary, p. 16.

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where afterward the kings Devánampiyatissa (307 B.C.) and Duṭugemuṇu (164 B.C.) had erected a dágaba.* According to the Yakkhos, in whose midst the Buddha here appeared, he visited on a second occasion "Nágadípo," the abode of the Nágas, or snake-worshippers,† which is generally assumed to be the name for the north and west of the Island; at any rate, mention is made of Nágas living by the ocean, as well as mountain Nágas: there is a Nága king of Kelaniya spoken of in the neighbourhood of Colombo. Sir E. Tennent‡ compares this idol worship to that of the Rákshas among the Dravidian tribes of Hindústán, and probably with much correctness, but he overlooks the fact that if any importance is to be attached to these mythological traditions, a multitude of tribes, or at least a division of the original population, must be inferred. And it is not without value that the description of the Nága states in these most ancient myths discloses to us the picture of a much more perfect organisation than we find any account of in the tales of the Yakkhos. Nevertheless, we must renounce the idea of using these myths as the basis for ethnological contemplation and for building up a highly developed Veddá state in pre-historic times. If the Veddás of Bintenna were Buddhists before the time of Wijayo, the later absence of all religion among them, their preference for animal food, and many other things, are scarcely explicable.

Up to a very recent date the Veddás have been a nomadic, half cave-inhabiting race of hunters. As already said a small number of them lived upon a proportionally vast tract of woodland, which without exact boundaries, but under the recognition of a kind of traditional family claim, was distributed among little groups of relations, who clung together. Each family had its special hunting-ground, to which its prerogative was acknowledged. Within this they

* Tennent, *l. c.*, II., p. 420. † Maháwaṇso, p. 4.; Glossary, p. 18.
‡ Tennent, *l. c.*, I., p. 328.

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sought honey and bees'-wax, dug edible roots, chased the game, and laid their snares for birds or fishes. Of any kind of culture, be it of garden or farm, there was no trace. They had no tame domestic animals, except the dog; and it may be questioned whether even this was not a later adoption, for according to Bailey* the species differs in no wise from the race common in Ceylon. Moreover, the dogs seem to have been trained to be watchdogs, and not for the chase.†

Sir John Lubbock‡ lays much weight upon their possessing hunting buffaloes, which were so well trained that the hunter guided them by a rope slung round one horn, whilst he himself, concealed behind them, crept up to the game. But Mr. Bailey§ says expressly that this practice, which he certainly had observed in Bintẹnna, extended all over the Island: we therefore can hardly concede to the Vẹddás a claim to this invention.

Their hunting utensils are the simplest possible. They consist of a strong bow, six feet long, and from two to three arrows, three feet and a half long, whose points are of wrought iron. All the writers describe the bending of this bow as very difficult. Sir E. Tennent‖ describes the Vẹddás in a half-lying position, using the left foot to draw the bow, and gives a picture of one, according to a model carved in ebony, by one of the native wood-carvers. More recent reporters find no trace of the continuance of such a practice; they describe the bow as being drawn with the left arm, and attribute the extraordinary power and development of this arm to this practice.

Besides iron arrow-heads the Vẹddás had one iron axe—sometimes, though rarely, two, a larger and a smaller one

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* Bailey, *l. c.*, p. 286.

† Davy (*l. c.*, p. 117) says plainly, they do not use dogs for the chase, unless perhaps at *talagoyá* (iguana).

‡ John Lubbock. Pre-historic Times. London, 1878, 4th edition, p. 448.

§ Bailey, *l. c.*, p. 288.

‖ Tennent, *l. c.*, vol. I., p. 499; Note 7, vol. II., p. 439.

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—principally for the purpose of cutting wax and honey out of hollow trees. These tools they obtained by barter with their neighbours. Their only achievement is shaping the arrow-heads for special uses by pounding them. But even these poor specimens of work are rare, and preserved in the family as precious heirlooms; sometimes, indeed, they make arrow-points simply of sharpened wood, ornamented with feathers of birds. Mr. Hartshorne* makes the interesting statement in connection with these facts, that the word *galrekki*, by which they denote the axe, is connected with the Siŋhalese *gala*, "stone" or "rock," and rightly finds in this a reminiscence of an earlier period, when stone weapons were in use among the Vẹddás. I am not, indeed, aware that utensils of stone have been found in Ceylon, but on the other hand I do not know that they have ever been sought for there. It would perhaps be a not unprofitable task to explore those caverns thoroughly in the hope of finding other contents, where, according to Mr. Bailey, bones of the dead are still to be found.

They subsist almost wholly on animal food. Like the Buddhists, excluding the flesh of cattle, and also (according to Sir Emerson Tennent and Mr. Bailey) that of the elephant, bear, leopard, jackal, and fowls. They eat, however, the flesh of all other birds, of the Ceylon elk (samba, *Rusa Aristotelis)*, deer (*Axis maculata)*, monkeys, pigs, iguana, and pengolin (*Manis pentadactylos)*—the last being considered the best: among fishes they prefer the eel.† All their food is cooked; as, however, they have no clay or earthen vessels, the preparation of the meat is very rough. Wolf‡ even asserted they ate the meat uncooked. At present this does not seem to be the rule; they now boil and roast their

* Hartshorne, *l. c.*, p. 408.

† In the choice of their food both classes (rock Vẹddás and village Vẹddás) are almost omnivorous, no carrion or vermin being too repulsive for their appetite. Tennent, II., p. 439. "Their food being only flesh." Knox, p. 61.

‡ Wolf, p. 117.

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meat. They strike fire in the usual way in the East, by placing one pointed stick against the concave of another piece of wood, which they hold between the feet and whirl round rapidly.* For this purpose they use the wood of the same tree from which their bows are made—the *velanga* tree *(Pterospermum suberifolium)*.

It would seem, however, that of late this custom of fire-rubbing had gone out of use; at least Mr. Hartshorne asserts that they now use flint and the steel of their axes or arrow-points for the purpose.

The use of any special stimulant is unknown among them; they have neither betel nor tobacco.† They drink only water, and chew a kind of bark. Even salt was unknown to them, as Mr. Hartshorne‡ informs us; but when it was given them they were much delighted with it.

Only in single places, where European influence is perceptible, do we find a rude kind of agriculture, such as is seen at the present day in Spain and in the Troas. Little strips of the jungle are burnt down and tilled ("chena"), and then again let alone for five, ten, fifteen years§; with this exception, which really cannot be taken into account, their whole existence depends upon the products of the chase. The universal recognition of this appears in their name, which, according to the almost unanimous application of the word, signifies "hunter," "archer," "one who shoots." I shall return to this later. For the present I would only lay stress on the fact that in the customs of the Veddás there is nothing to speak of which indicates that anywhere, or at any time, they have risen above the condition of a savage tribe of hunters.

Indeed, they have never arrived at even the very crudest

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* A detailed description by Sir E. Tennent, *l. c.*, II., p. 451.

† In the illustration by Knox the Veddá is represented with a lighted pipe, but this was an unwarranted addition by the artist.

‡ Hartshorne, *l. c.*, p. 413.

§ Bailey, *l. c.*, p. 282.

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form of permanent dwelling places,* although they sheltered themselves from the inclemency of the weather in the natural caverns of the country, or in simple huts† made of branches of trees and bark put together: they seem never to have made these their settled abodes.

On the contrary, perpetual change of place within their hunting grounds was ever the rule. Hence their social intercourse, indeed their circle of interests, is essentially limited to their nearest of kin, whose number is often very small, consisting, perhaps, of only four or five persons. All stimulant to higher requisitions and enjoyments is therefore wanting. Ambition, jealousy, love of finery, cannot thrive among them; nor, on the other hand, does the need of any sustained mental effort appear. Thus, as it seems to me, may the natural explanation be found of a list of peculiarities; indeed, also, in part of contradictory oddities.

From such a wild and inferior race of people one might perhaps expect that they would assault strangers, menace their neighbours, and live in a state of war with the more remote portions of the tribe. But, setting aside some very old tales and records of individual cases, which may be wholly disregarded, the habits of the Vęddás are thoroughly peaceable. They have never even made the step from hunter to warrior. They are peaceable among themselves and towards others, so long as they are unmolested. They

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* Knox (*l. c.*, pp. 61, 62) says of them:—"They have no towns nor houses, only live by the waters under a tree, with some boughs cut and laid round about them, to give notice when any wild beasts come near, which they may hear by their rustling and trampling upon them." He saw such places on his flight from an almost twenty years' imprisonment.

† Sir E. Tennent, *l. c.*, II., p. 439, speaks also of this, and that they sometimes slept upon stagings which they prepared in the trees. This would demonstrate habits like those to which Mr. F. Jagor calls attention in his account of the Kanikars in Hindústán. (Zuitf. Ethnologie, 1879. Verhandh. der Berlin Anthrop. Gesellsch, s. 79, Tat. 9.) On the other hand, Mr. Hartshorne asserts they are bad climbers, and possess no special capacity for catching hold with the feet. Percival (*l. c.*, pp. 284, 285) asserts on the other hand that they climb trees with the greatest expertness and celerity, and sleep on them or at their feet.

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respect the rights of property, and are true, and, further, loving. In proportion as their life is limited to the circle of the family, family feeling is more strongly developed. Adultery and polygamy are mentioned* only where attempts have been made to civilise them, whilst among their neighbours, the Siṇhalese Kandyans, adultery and polyandry† were so common that the English Government was obliged to issue a special law for prevention. Conjugal fidelity and monogamy, as well as love for their children, were matters of course among the Vęddás. Mr. Bailey‡ quotes the very characteristic remark of a Kandyan about them, that "they are just like wanduroos" (monkeys); and yet the women are far from being attractive, are not conspicuous by their ornaments, nor even cleanly. "They are the most ordinary specimens of the sex I ever saw," says Bailey.§ Both sexes go almost naked. In former times they wore pieces of the bark of the *riṭi* tree (*Antiaris innoxia*, or *A. saccadora*) ; these were later replaced by little bits of cloth, which were held fast around the body by a string. The women were distinguished by wearing round ivory pegs stuck through their ears. Mr. Hartshorne,‖ however, saw ornaments worn in the ears by both sexes—generally pearls, or what seemed peculiarly admired, empty cartridge-boxes. Evidently these are quite modern innovations; and we may without hesitation assume that, up to a comparatively recent date, perfect, unadorned nakedness was the rule, modified at the most only by a slight covering of the pudenda.

If nevertheless neither polygamy nor polyandry has been observed among them, this may be explained by the isolation of families, and the great distances which separated them ; perhaps, we can in the same way also account for the other very peculiar custom among them, which has been testified

* Gillings, *l. c.*, p. 86.
† Tennent, *l. c.*, II., p. 428.
‡ Bailey, *l. c.*, p. 293.
§ Bailey, p. 284.
‖ Hartshorne, p. 409.

to by various travellers, viz., that of marriage with a sister. It was only with a younger sister, marriage with the elder being considered unchaste. According to Mr. Hartshorne,* even marriage with a daughter was allowed, although probably this, if it occurred, as a matter of fact was not legitimated. Knox † also tells of a king of Kandy who had a child by his daughter, but none of his subjects seem to have considered this a proper relation. Bailey‡ is inclined to see in this marriage with the sister a last remnant of times outlived. This reminds us that Wijayo, the founder of the Siŋhalese dynasty, sprung from marriage in India with a sister, and that his son again, Jívahattha, whom he had begotten with a Yakkho princess in Ceylon, had married his sister, and was the progenitor of a special tribe, the Pulinda. Later, this practice was also in use among the royal families of the Siŋhalese.§ We must allow that these statements are certainly worthy of attention, but these old myths are hardly to be looked upon as positive historical facts. They seem to me only to prove that a practice which existed also in Persia and Egypt, was early permitted in Ceylon ; the reason for it was probably the same everywhere, in the royal families as with the naked Vẹddás, the lack of suitable women, or of women altogether. At any rate, it is not unchastity or licence which leads the Vẹddás to form such marriage ties. A marriage among them is usually decided by the will of the parents of the bride, who herself is allowed no choice; the only ceremony consists in the bringing of food for the parents on the part of the suitor. If under these circumstances the matrimonial tie is held faithfully and truly, it surely speaks for the purity of heart in such a wild race.

On the other hand we perceive from the accounts of different observers, that there is no particular depth of feeling among the Vẹddás; all the descriptions indicate rather a

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* Hartshorne, *l. c.*, p. 416. † Knox, *l. c.*, p. 38. ‡ Bailey, *l. c.*, p. 310.

§ Sir E. Tennent (II., p. 459) quotes as authority for this, Valentyn, *l. c.*, cap. IV., p. 63.

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certain morose indolence, which is only occasionally broken through by their love of habit. Most noticeable in this connection is an observation of Mr. Hartshorne's,* which he corroborates by a series of instances. I refer to the incapacity of the Vẹddás to laugh. Whilst they can help they not only do not laugh themselves, but despise those who do. As far as my knowledge goes, nothing like this has been told of any other race of people; only among certain idiots has this peculiarity appeared.

In point of intellect Vẹddás seem indeed to stand very low.

According to Mr. Hartshorne† they are wholly unable to count, have no numerical words, and do not even use their fingers for the purpose. Mr. Bailey‡ does not go quite so far; he says they count with difficulty on their fingers, but he gives no numerals in their vocabulary, and relates how hard it is to make a Vẹddá understand anything which extends beyond the very next day. The Rev. Mr. Gillings§ says they could count only to a very limited extent. Davy‖

* Hartshorne, *l. c.*, p. 410.

† Hartshorne, p. 413. "They are wholly unable to count or to comprehend the ideas of one, or two, or three, nor do they even use their fingers for this purpose; and the chief difficulty in obtaining any information from them arose from their inability to form any but the most simple mental synthesis, and from their very defective power of memory." On another occasion Mr. Hartshorne even asserts the Vẹddás had no idea of the distinction between one and two. (Journal of the Anthropological Institute of Great Britain and Ireland, 1878, vol. VII., p. 468.)

‡ Bailey, *l. c.*, p. 298.

§ Gillings, *l. c.*, p. 88.

‖ Davy, *l. c.*, p. 118. In this place the "Village Vẹddás" are spoken of. Pritchard (Researches into the Physical History of Mankind. London, 1844, 3rd edition, vol. IV., p. 193), who says the same, reports that the description of Dr. Davy refers to a large "party" of Vẹddás whom he saw during his visit to Kandy. According to their own account these people had come from the neighbourhood of the Lake of Bintẹnna, where "a little grain" was cultivated. I do not doubt the correctness of this communication, which is of great importance for a true estimate of the statement regarding the intellectual capacities of the people. But it is taken from a work of Dr. Davy's not accessible to me. Prichard cites it under the title: "History of the Island of Ceylon." In the "Account of the Interior of Ceylon" no reference is made to it, although the visit to Kandy is very circumstantially described (p. 364, sq.).

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asserts they have hardly any knowledge of numbers, and cannot count beyond five. Sir E. Tennent* goes a little step further in saying they are incapable of counting over five on their fingers. Even this is after all very little, especially when we realise that these milder statements refer to the "tamer sort." Mr. Hartshorne† also contends that their language includes no word designating colour; that they have neither a fancy for bright colours nor any sense of the distinction in colours.

Finally, he complains of their defective power of memory, and their inability to form any general ideas. Sir E. Tennent says they have no notion of time or space, no words for hours, days, or years—no games—no amusements—no music. These statements, however, in their full breadth apply only to the "wild sort" of the village Vẹddás. Davy‡ says that they have a rough kind of song, performed as an accompaniment to a very clumsily executed dance. When we add to all this the fruitlessness of any and every attempt to educate them, we are compelled to acknowledge the inferiority of the race. Even granting some of the observations furnished are too exclusive, it would not alter the general opinion.

It looks like a contradiction that, as Mr. Hartshorne§ informs us, they consider themselves as superior to their neighbours. This sort of contradiction is not limited to the Vẹddás—narrow-minded people not unfrequently over-value their capacities. But it does sound very strange when the different reporters state that the Vẹddás are looked upon even by their neighbours as members of a high—yes—of a regal caste. They are said to have been allowed in earlier times to speak of the king of Kandy as "*Hùrá*," which means "cousin." As among themselves they know of no distinction of caste, this is indeed very striking. It has even been regarded as an evidence of the correctness of the tradition that they are

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* Tennent, *l. c.* II., p. 443.

† Hartshorne, *l. c.*, p. 409.

‡ Davy, *l. c.*, p. 118.

§ Hartshorne, p. 412.

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of royal blood, or even as Mr. Bailey* assumes, descended straight from King Wijaya himself; but where then is the posterity of those Yakkho people to be found whom Wijaya met upon his arrival on the Island? It is not possible to bring any of the other numerous races represented in Ceylon into a nearer connection with this aboriginal population.

The earliest reporters who have spoken at any length on this subject of caste in the Island, all concur in declaring that the Veddás were counted as members of a higher caste.

Davy,† who enters most minutely into this matter, says that the majority of the Siŋhalese were assigned to the agricultural caste, to the so-called "Goyivaŋsé," or, as it is styled in the lowlands, "Vellála," and that to this caste also the Veddás belonged. Philalethes‡ makes the same statement. He explains the word *Govi* to be Siŋhalese, and the word *Vellála*, Malabar; to this caste belonged, according to him, the Vanni Veddás, and he speaks of two sorts—one wearing leaves upon their bodies, the other using the bark of a tree made soft by special preparation. That the later observers touch less upon this subject is explained from the circumstance that in recent times the distinction of caste has lost much of its significance among the Siŋhalese, who even in earlier times left the two highest castes, the Royal and the Brahmin, without representatives. Perhaps this circumstance also explains the peculiar usages by which the Veddás, who really belong only to the third general caste, have been brought into connection with the kings themselves. As late as the year 1853, the secretary of the Ceylon Branch of the Asiatic Society remarks in a note§ that the Veddás of Bintenna and of the sea coast consider themselves members

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* Bailey, *l. c.*, p. 312. † Davy, *l. c.*, pp. 112-15.

‡ Philalethes, *l. c.*, p. 332. The name Philalethes is a pseudonym, as Sir E. Tennent presumes (*l. c.*, Introduction, p. xx., note 5), to conceal that of the Rev. G. Bisset. This gentleman was in Ceylon at the same time with Dr. Davy, who mentions him personally, *l. c.*, p. 372, sq.

§ Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 89.

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of a very high caste, and call themselves Vęddá Vellálas. From these communications we see clearly that the designation "Vellála," which we find also in Hindústán, has only a hierarchical meaning, but is of no help at all toward the discovery of the relationship and derivation of the tribe.

Another name here requires particular mention, as it is liable to introduce confusion. It is the name "Daḍa Vęddás," which is given to a division of the Ṣudra (Kshudra) caste, that being one of the very lowest classes: hunters dwelling in the wildest parts of the mountain region.*

Knox † says the lowest of the low are beggars, who are the descendants of the "*Dodda Vaddahs*, which signifies hunters;" it had been their task to provide game for the King of Kandy. When, however, instead of venison they brought him human flesh, the king had them thrust out, and given over to beggary. The detailed description which he gives of them shows that he means one of the outcasts. Davy cites two kinds of them: the Gattaru and the Roḍiyas, or Gasmandó, whom he compares with the gypsies. The latter are now usually called Roḍiyas. Of them Sir Emerson Tennent ‡ relates the same story that Knox tells of the Daḍa Vęddás, adding that a legend declares them to be a branch of the Vęddás. A still more minute description of them has been furnished by Mr. Casie Chetty. § He calls them a peculiar and distinctive race, either descendants from a colony of wandering hordes out of India, or the last remnants of an aboriginal population mixed with Siŋhalese women of high caste, who had been punished by the king with loss of caste. They live, he goes on to say, in the interior, not great in numbers,—perhaps, in all, not above one thousand,—scattered, or in special detached villages (*kuppáyam*). In the Seven Kóralés two divisions are distinguished: the *Tiringa Roḍi* and the *Halpagé Roḍi.*

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* Davy, *l. c.*, pp. 112-27. Philalethes, *l. c.*, p. 334.

† Knox, *l. c.*, p. 70.

‡ Tennent, *l. c.*, II., p. 187.

§ Simon Casie Chetty. Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 171.

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They are more robust and athletic than the Siŋhalese, and the women frequently pretty. Both sexes allow the hair to grow its full length, and wind it into a coil. They live by the chase, and use bows and arrows like the Veddás; like them also they wrap their dead in mats and bury them. Although Buddhists they offer sacrifices to the *Gará Yaká* and to the *Vedi Yakku.* They speak Siŋhalese, but have some peculiar words, which Mr. Chetty thinks remnants of past ages. The description by Sir E. Tennent agrees with this. He visited a Rodiya village, which lies on the pass between Kandy and the Mahaweli-gaŋga, and gives a picture of a group of these people. He proves that the Rodiyas were mentioned in the *Rájáwaliya* as early as 204 B.C., and in the *Mahówaŋso* 589 A.D.

According to his opinion they differ physically very much from the Veddás, and he is inclined to believe they had their origin on the coast of India, and belong to the Chaṇḍálas. For the rest they are only found in the Districts of Kandy. Although they may be compared to the Cagots and Caqueux of the Pyrenees, there are yet two races of outcasts in Ceylon, who were detested even by the Rodiyas, namely, the *Embet-táyó* (barbers) and the *Hanomoreyó* (betelbox-makers) in Uva.

The existence of these outcasts is of no little importance to us in explaining the position of the Veddás among these complicated tribal relations. Had the Veddás, as many have surmised, been originally outcasts, they would surely have remained so to this day, just as the Rodiyas have been for at least two thousand years. If they had, like the Arabs, the so-called "Moormen," subsequently emigrated, they would not be placed in the relatively high caste of Vellála, for the Moormen are in no caste, although attached to the Karáwé (fishermen), a subdivision of the Ṣudras. Unquestionably, then, the Siŋhalese must have retained a feeling of the original connection, which in spite of the religious and physical dissimilarities made them acknowledge the Veddás

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as belonging to the social order of the Buddhists. Thousands of years had not sufficed to reduce the Roḍiyas to that degree of degradation to which the Vęddás had fallen when Knox heard of them, and which is most strongly expressed in the words of Davy,* who says of the forest Vęddás that they are "rather solitary animals than social, and resembling more beasts of prey in their habits than men." We shall yet see what objections there are to our regarding the Vęddás simply as "wild Siṇhalese," and how it has happened that a great number of direct observers have thought to find their origin on the coast of Malabar. This point will be more appropriately treated of later, and after we have considered the physical peculiarities of the different tribes under discussion. It here seems in place first to bring forward the historical and linguistic observations which concern the relations of the cultivated tribes of the Island.

The natural territory for immigrants is, as aforesaid, the north-west part of the Island, which lies nearest to the peninsula of Hindústán. Here a Tamil population is established, whose connection with the Dravidian of India seems unquestionable. In the history of Ceylon we find very early mention of inroads by the Dravidian hordes. In the *Maháwaṇso* these people are called "Damilos." Since according to the testimony of the trustworthy Childers,† the word *Damiḷa* is in the Páli identical with *Draviḍa* in the Sanskrit, we may without hesitation apply to the Dravidians whatever is said of the Damilos in the *Maháwaṇso*. The English local writers generally call them Tamils or Malabars. Sir E. Tennent,‡ however, repeatedly warns us against understanding this to mean only the inhabitants of the actual Malabar coast. On the contrary, they belonged to one of the earliest organised states in the south of India, to the kingdom of Páṇḍiya,

* Davy, *l. c.*, p. 116.

† R. C. Childers' Notes on the Siṇhalese Language. Journal of the Royal Asiatic Society. London, 1875, vol. VIII., p. 133, note.

‡ Tennent, *l. c.*, I., pp. 353-94.

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which embraced the largest part of the Coromandel coast as far as Canara on the west coast, and south down to the sea, and of which at present there remains only the little State of Madura. Later on, hordes bearing also the name of Malabars poured over the Island from all parts of the peninsula, and also from the Coromandel coast as far as to the north of Cuttack and Orissa.

As early as the year 237 B.C. an invasion of the Damilos in the north is mentioned, where they established a sovereignty lasting twenty-two years.* Scarcely were they vanquished when, under the next king of the Síhala dynasty, Aséla (about 215 B.C.), again a Damilo, of the tribe of Uja in the Chóḷaland,† usurped the throne‡ and ruled forty-four years. Although regularly defeated the Damilos ever anew repeated their invasions. In the reign of the king Mihinda (1023–1054 A.D.) the foreign population in the Island had increased to such an extent that they overpowered the aborigines, and upon a new invasion of the people from Solí the king was taken prisoner, and the country for a long time held under subjection.§ From Malabar fresh hordes continually streamed in, and only after severe struggles was the foreign yoke thrown off. But in the beginning of the thirteenth century the Chóḷas invaded the land again.‖ This time, however, the conquerors came from much more distant places, namely, from Káliṇga, and from the part of the Dekkan now called the Northern Circars.¶ Their leader, Mágha, subjected and cruelly devastated the whole country from north to south, and became king of Ceylon in 1211 A.D. Later, the Siṇhalese prince succeeded in winning back again the provinces of

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* The Maháwaṇso, chap. XXI., edited by Turnour, p. 127. In the same book comp. Appendix: Sovereigns of Ceylon, p. lxi.

† According to Turnour, Maháwaṇso, Glossary, p. 5, the Siṇhalese *Solí* is called Chóla, and probably embraces Mysore and Tanjore.

‡ Maháwaṇso, p. 128.

§ Maháwaṇso, chap. LXIV.

‖ A. De Silva Ekanáyaka. Journal of the Royal Asiatic Society, 1876, vol. VIII., p. 297.

¶ Tennent, *l. c.*, I., p. 412.

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Ruhuna in the south and Máyá-raṭa in the mountainous centre of the Island; but the north of the country, the province of Pihiṭi or Rája-raṭa, the old land of the kings, remained, even as far as the Mahawęli-gaŋga, in the hands of the Tamils, and was by degrees wholly and permanently Dravidised. Only a part of this population, the Mukwás,* who dwell on the north-west coast, northward from Chilaw, have accepted the Christian religion.†

In the same way, although in a more peaceable manner, came into the country numerous Muhammadan Arabs, who since the time of the Portuguese have been called "Moors" or "Moormen."‡ Sir A. Johnston places their arrival in the early part of the eighth century, and traces their descent from the house of Hashim, whose members were driven from Arabia by the Calif Abdul Melek ben Merwán, and settled in Southern India, Ceylon, and Malacca. But the careful investigations of Sir E. Tennent§ have furnished evidence that the settlements of the Arabs in the Island were of much earlier date. Even when we set aside a very dark passage in Pliny, still there seems to be no doubt that at least since the first, or surely since the sixth century A.D., very extensive mercantile relations existed between Persia and Arabia and Ceylon, and that since that time many of these "Mauren" (as the Portuguese called them later) remained in the land. Sir E. Tennent considers the present Moors descended from the immigrants who intermarried with the natives. Mr. Pridham‖ divides the Moors genealogically into two groups: one he traces back to the old Arabian immigrants, who took to themselves

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* A similar word (Mokna) is used in Madagascar to designate immigrant Africans. (Verhandl. der Berlin. Anthropological Societät, 1880, s. 190. Zuitf. Enthnolo. Bd. 12.) Here a Negro tribe is alluded to on the eastern coast of Africa that bears this name. (Monatsbere der Academie, 1880, s. 1017.) Possibly the coincidence in the name is a mere accident.

† A. O. Brodie, Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 50.

‡ *Id.*, p. 40.

§ Tennent, *l. c.*, I., pp. 546, 555, 607.

‖ Pridham, *l. c.*, I., p. 470.

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wives from among the natives, and begot children by them; of the other, whom he calls Indo-Moors, who in greater numbers are said to have later settled in the districts of Chilaw and Puttaḷam, he gives no generic explanation, only contradicting the opinions of Mr. Cassie Chetty, that they derive their origin from a mixture of an aboriginal Hindústání population, the Sonahars, with Arabs and other Muhammadans. At any rate, however, Mr. Pridham acknowledges that no distinction any longer exists between the two groups. They are now in separate villages, portions of them scattered about over the whole Island, and are the chief medium of all mercantile intercourse, even with the Vẹddás.

Malays belonging throughout to the Muhammadan religion are to be found in the Island only in comparatively small numbers, but scattered over many regions. According to the representation of Mr. Pridham,* they are descended chiefly from the little Rájás and their followers, whom the Dutch drove either from Java, Malacca, or Sumatra, and who were later by the English taken into their regiments of natives. More important it would be for us if the opinion were correct that the original population of the Island had been Malays. This is supported by the certainly very noticeable fact that the Siṇhalese used double canoes, or boats with booms, just such as are used in all the regions inhabited or colonised by Malays, that is to the west of the Indian and Arabian coast of Madagascar.† This, however, is the only foothold for the hypothesis of an ethnic relationship.

Naturally in the last centuries the different nations of Europe, especially Dutch, Portuguese, and English, have been added to the population, but for our researches they are of no importance. The same is to be said of the African Negroes and the Parsees, the former of whom have been only recently introduced, whilst the latter immigrated at different periods, but in small numbers.

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*Pridham, *l. c.*, I., p. 482. †Tennent, *l. c.*, I., p. 327; II., p. 103 (engraving).

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The southerly half of the Island, the old province of Ruhuna, and the central Máyá-land, are still peopled by the Siŋhalese,* the former by comparatively pure-blooded Siŋhalese, the latter by the somewhat more mixed Kandyans, who have been repeatedly mentioned as the immediate neighbours of the Vęddás.

The ethnological position of the Siŋhalese has been until now discussed chiefly on linguistic grounds.

Since Rask† their language has been considered as Dravidian; Lassen‡ has sustained this opinion with the whole weight of his authority; he regarded the Siŋhalese people, according to their language, as belonging to the great family of the Dekkan tribe. Still more recently Mr. F. Müller has declared the Siŋhalese language to be an idiom akin to the Dravidian language, strongly mixed with Indian elements, which, however, differing from them genealogically, has therefore had an independent development. Hence he infers the population to be a mixture of immigrated Indians‖ with the aborigines, who seem to be of the same race as the Dravidians. Directly the opposite opinion (and one which of late is more and more generally recognised) has been maintained by d'Alwis¶ and Childers,** both of whom were employed in the civil administration of the Island. Childers, whose thorough knowledge of the Indian languages is universally acknowledged, separates the present Siŋhalese language from the ancient Ęlu, from which, as he says, it is certainly derived, but from which it also differs through the immense number of Sanskrit words it includes, partly unchanged, as the English

* In the writing of this name I follow the explanation of it by Childers, *l. c.*, p. 37 (instead of Singhalese or Cinghalese).

† Rask. Singalesisk Skriftlaere. Kolombo, 1821, (quoted by Lassen).

‡ Christ. Lassen. Indische Alterthumskundl, I., s. 199–303.

§ Fr. Müller. Allgemeine Ethnography. Vien., 1879, s. 466, sq.

‖ Reise der Novara, O. S., 139.

¶ James d'Alwis. On the Origin of the Siŋhalese Language. Journal of the Ceylon Branch of the Royal Asiatic Society, 1867–70.

** Journal of the Royal Asiatic Society. New series. London, 1875, vol. VII., p. 35; 1876, vol. VIII., p. 131.

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of to-day differs from the old Anglo-Saxon. According to him the name of *Ẹlu* is identical with the word *Siŋhala*, as the Siŋhalese call themselves, which borrowed from the Sanskrit is by the uneducated generally pronounced *Hiŋhala;* it stands for the old word *Hela* or *Helu*, and this again for a still older *Sela*, which leads us back to the Páli of *Síhala*. The old tradition, according to which the founder of the Síhala dynasty (Wijaya) came from Láḷa, a district of Magadha (Behar) in India, agrees very well with the fact that according to another tradition Páli was originally a Magadha dialect. Páli and Siŋhalese are so nearly related that one might almost believe at the first glance the latter to be derived from the former, but on closer inspection we should see that Páli, in which the teachings of Buddha were written, represents only the dialect of one district of Magadha. Hence Siŋhalese is one of the native Aryan (Sanskrit) languages of India, and very ancient. For it is absolutely identical with the Ẹlu of the fifth and sixth centuries A.C., which is found also on the rock inscriptions of Mihintalé of the second or third century. The early establishment of the language is explained by the fact that Mahinda, at the beginning of the third century B.C., translated a Buddhist work from the Páli into the Siŋhalese, thereby making the latter the written language.

What place the Vẹddá language holds relatively to this is still in the highest degree dubious. In Ceylon itself the opinion has long prevailed* that it is a broken or corrupted Siŋhalese. Mr. Bailey† also adopted this opinion, although he considers the Vẹddás as descendants from an ancient Tamil population. But he found in their language numerous Hindú words—personal names—corresponding often to the names of Hindú gods or goddesses. Hence he was inclined to assume an

* Knox, *l. c.*, p. 104. Mr. Justice Starke. Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 80. Gillings, *id.*, p. 84.

† Bailey, *l. c.*, pp. 297, 305, 309. He mentions especially that the so-called elk of Ceylon (*Rusa Aristotelis*) is in Vẹddá language called "gawra," which reminds one of the gaur (*Bos gaurus*) of Hindústán. But to be sure the pengolin (*Manis pentadactylos*) is also called "gal gawra."

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early mixture of the Vęddás with the Sanskrit-speaking people of India. Mr. Max Müller* confirms the frequency of Sanskrit words in the Vęddá language; more than half the Vęddá words, according to him, are, as in the Siŋhalese itself, mere corruptions of the Sanskrit. Mr. E. Tylor† also, who considers the Siŋhalese an Aryan tongue, holds the Vęddá language for a Siŋhalese dialect, although with a mixture of Dravidian (Telugu) words. Therefore he finds a striking contradiction in that probably a non-Aryan, aboriginal tribe speaks an Aryan language. This he calls a perfectly unique instance in ethnology. Later on he repeats his thesis in the following words: "Their legends as well as their language make a mixture of Aryan blood along with Aryan language probable; whilst bodily characteristics show that the race of Vęddá belong chiefly to the native pre-Aryan type.

Mr. Hartshorne‡ has again recently asserted, in direct opposition to Mr. Tylor, the entire absence of a distinct Dravidian element in the Vęddá language, and allows in it only approaches to the Siŋhalese, to the Páli, and to the Sanskrit. Mr. Cust§ contends for the reverse, objects to the idea of any admixture of Páli or Sanskrit, and holds the

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* Max Müller. Address to the First Meeting of the Aryan Section of the Oriental Congress of 1874, cited by Childers, *l. c.*, vol. 8., p. 131, note.

† Journal of the Ethnological Society of London, 1870. New series, vol. 2, p. 96.

‡ Hartshorne, *l. c.*, p. 417. "Besides the words which indicate an affinity with Siŋhalese, there are others which are allied with Páli and with Sanscrit, and an important residue of doubtful origin; but it is worthy of remark that from beginning to end the vocabulary is characterised by an absence of any distinctly Dravidian element, and that it appears to bear no resemblance whatever to the language spoken by the Yakkas of the East Nipal. A similarity may, indeed, be traced here and there between a Wedda word and the equivalent for the same idea in modern Tamil, Malayalam, or Telugu; but the cases in which comparison is possible are so rare, that these apparent coincidences may be fairly considered to be merely fortuitous."

§ R. Cust. A Sketch of the Modern Languages of East India. London, 1878, p. 63.

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Vẹddá language to be simply a dialect of the Siṇhalese, which he, like the other writers, looks upon as an Aryan language.

With these disagreements in the views of linguists, we gain, unfortunately, very little from them towards a just comprehension of the phylogenetic position of the Vẹddás. On the contrary, the mystery that envelops this people, so remarkable in themselves, is vastly increased, and the purely anthropological interest comes even more into the foreground.

So far as we at present know, this people, like so many others, bears a name ascribed to them by outsiders. Mr. Hartshorne only, in a communication made by him to Childers,* asserts that they gave themselves this name (pronounced Vaeddá). The reports generally say just the contrary. The designation Vẹddá or something like it (Vedda, Veda, Vedan, Vaidan, Beda, Bedan, &c.), is widely used in India, as Mr. F. Jagor† has lately shown by a comprehensive grouping of facts. A whole series of little tribes dwelling far apart, and probably not having the least connection with another, bear this very same name, or one quite like it. The translator of Percival's work, Bergk,‡ reminds us that there are Vẹddás even in Sumatra and Borneo. At any rate, whether that word is derived from the Sanskrit (*Vyádha*, "hunter") or the Tamil (*Véḍan*, "hunter," "wood-dweller"), so much seems to be certain, that except where it is used in combination, as, for instance, in the earlier mentioned Daḍa-Vẹddá, it always relates to aborigines or savage races. In so far it stands, as Mr. Bailey§ remarks in a paragraph, with the purely literary words "Habara" (barbarian) and "Vannacharakiya" (hunter), and the like. Dr. Max Müller, who declares the

* Childers, *l. c.*, vol. 8, p. 131.

† Verhandlungen der Berliner anthropologeschen Gesellschaft, 17th Mai, 1879, s. 172. Zeitschr. füw Ethnologie. Bd. XI.

‡ Percival, a. a. O. S., 335.

§ Bailey, *l. c.*, p. 297.

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correct writing of it to be Vaeddá, or originally Veadi (Vaediminitta—Vęddá-people), agrees entirely with the derivation from Vyádhah, and Childers therefore defines the Vęddás as "wild Sinhalese."

How long the name has been in use is not yet clearly established. In the works of ancient Occidental writers only one passage has as yet been discovered wherein the Vęddá name is preserved, although in a mutilated poem. In a work* ascribed, falsely perhaps, to the Bishop Palladius of Helenopolis in Bithynia (defunct 410 A.D.), which describes the journey of a man from Thebes in Egypt to Ceylon, we read εἰσι δε καὶ οἱ Βιθσάδες ἀνθρωπάρια κολορα, μελανοκέφαλα ἄκαρτα και ἀπλότριχα.†

Sir E. Tennent,‡ following another edition, reads Βισάδες; but Βιθσάδες is more like the word Vęddá. Since the further description likewise suits the Vęddá right well, we may conclude that here the name was for the first time transmitted to the Occident. Before this we only hear that Megasthenes in the time of Alexander knew§ of "Palæogonen" upon the Island, which signifies, according to Sir E. Tennent,‖ "Paliputrá" (sons of Pali); but according to Lassen,¶ referring to the Rákshasas, or giants. In the first case it should apply rather to the Sinhalese, in the latter to the Vęddás (though certainly not in the sense of giants). The inland writers do not use the name of Vęddás until much later.

Mr. Hartshorne,** on the authority of an ancient ola (a book written with a stilus upon palm leaves) which was

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* Παλλαδίου περὶ τῶν τῆς Ινδιας καὶ τῶν Βραγμάνων. Palladius *De gentibus Indiæ et Bragmonibus*. London, 1668, p. 5.

† Tennent gives μεγαλοκέφαλα instead of μελανοκέφαλα, as read in the edition from which I have quoted, although the first perhaps seems more consistent. I must remark that the Latin translation given in the edition of 1668 is *capite nigro*.

‡ Tennent, I., p. 538, note 2; II., p. 438, note 6.

§ Plinius. Natural History. lib. 6., cap. 24.

‖ Tennent, I., p. 529.

¶ Lassen. De Taprobane Insula, p. 9.

** Hartshorne, *l. c.*, p. 414.

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in the possession of one of the Kandyan chiefs, states that King Dutugemunu (160 B.C.) appointed the Vẹddás servants of the god Skanda, in the temple Kataragama Déwâle built by him, on account of the purity of their caste. As, however, the age of the ola is not known, we can draw no sure conclusion from this statement. Only the fact that here again the purity of caste is emphasised must make us cautious about looking upon the Vẹddás as a mixed people. When we consider for how long a time, and with what scrupulous care, the people of India have matured and preserved the distinction of caste, *the fact that they have acknowledged without exception the unity and purity of such a wild tribe* must surely appear of great significance.*

Indeed, all inquirers testify to the unmixed character of the tribe. The different names which have been given to separate divisions do not indicate different tribes, but geographical and topographical distinctions. Thus the Tamils distinguish the "Maṇalkádu," or sandy jungle Vẹddás, from the "Cholaikkádu" Vẹddás, that is, those living on the sea coast, who speak Tamil and till chena land, from those yet leading a nomadic life, who, as they say, are quite different from the others, have preserved much of their original barbarism, and inhabit the more remote parts of the Bintẹnna district. At any rate, this distinction is not to be understood as referring to typical differences in the tribe.

From the preceding we gather that up to the present time two leading views stand opposed to one another, which are mainly supported by linguistic observations, and only in part by genuine anthropological facts. According to one, the Vẹddás would be next of kin to the Dravidians; according to the other, members of the great Aryan family. In both cases they must have immigrated from the continent, only in the first very much earlier than in the second. I find only one single conjecture mentioned of any such immigration. The

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* Hartshorne, *l. c.*, p. 406. † *Id.*, *l. c.*, p. 411.

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Rev. Mr. Gillings* repeats the story that the Vęddás originally formed a part of a Siŋhalese community living on the sea coast of India, and that from there they had been transported for certain offences over to the Island at a very early period, and before the Siŋhalese, as a people, had set foot on its shores. But we do not find it said anywhere that such a Siŋhalese community had existed on the Indian coast. Moreover, the Vęddá language, if any such separation from a common Aryan family had so early taken place, must have retained certain peculiarities belonging to that earlier period of development; and of this also nothing is known.

The explanation should be much simpler, if one might assume that the Vęddás were originally of the Dravidian race, or at least nearly related to the Dravidians; or even if different from them, at any rate, a savage aboriginal tribe; and that they only received their present language subsequently from their Aryan conquerors. With such an assumption the identity of this language with the Siŋhalese, which is defended by authorities, would be supported without an effort. But it cannot be denied that it is difficult to conceive how the process of Siŋhalesing the language could have been accomplished, whilst their whole way of living, their customs and habits remained wholly unchanged.

In the name chosen by Childers of "Wild Siŋhalese," little is gained. If it means savages with a Siŋhalese language, we have a fact given us, but no explanation. If, on the other hand, it means Siŋhalese who have become savage, we should then, with our explanations, have to fall back on some period after Wijayo, and contrary to all common experience be forced to add the hypothesis (against which I protested in a former passage) that the Vęddás from a high state of comparative civilisation, such as plainly had once been attained by the Siŋhalese, have sunk to the lowest level of human

* Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 84.

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existence. Religion, political organisation, civil life, all the arts and customs of firmly located tribes have been lost, indeed, forgotten, and that, too, while in closest proximity—even in direct contact—with a people who had passed through a long and eventful history. Such a degradation is not conceivable, unless we can prove at the same time very deep physical demoralisation.

From whatever side we consider the problem, we must always come to the conclusion that linguistics can only be used as aids in the investigation ; and that if a real solution is to be found, it is only possible by means of physical anthropology. What I have to offer in this direction is nowise adequate to lead on to a full solution, but it will perhaps contribute in reducing the possibilities of explanation to a small number, and thus prepare the way for a final decision. At the same time my hope is that these suggestions will stimulate to new labours, especially in the Island itself, that, if possible, even at the last hour every effort shall be made to obtain a correct description of the last remnants of this fast dying out people.

The hitherto ascertained facts regarding the physical peculiarities of the Vẹddás are the following :—

Even the description of Βιθσαδες (βισάδες) furnishes truly characteristic features. The principal passage has been already quoted : smallness and feebleness of stature, heads black and apparently large, with long, smooth unshorn hair.* Added to this is the further statement that the people dwelling in the rocky caverns are the smallest (πάνυ σμικρότατον καὶ ἀδρανέστατον), and that they are very agile in climbing the precipices.

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* The bad Latin translation of this, which is ascribed to the Holy Ambrosius, in the reprint appended to the above-cited edition of Palladius (S. Ambrosius *De moribus Brachmanorum*, p. 59) : Nam et ipsos exiguos homunculos esse et grandia quaedam capita asserit habere cum levibus et detonsis capillis. Here, therefore, once more is the supposed manner of reading μεγαλοκέφαλα.

Knox, as already cited, saw in his flight through the woods of the Vęddá country no human beings, only empty dwelling places. Hence the picture contained in his book represents a man differing from the likenesses of the Siŋhalese in look only, by his shorter and more thick-set figure; he wears the hair and beard noticeably long like the Siŋhalese, the former being gathered into a knot on the back of the head.

Percival,* 1798, saw some captive Vęddás in Colombo. According to his representation, they were of lighter complexion than the rest of the Ceylonese, being rather copper coloured, were remarkably well-made, wore long beards, and their hair tucked up close to the crown of the head.

Valentyn† says the Bedas, or Wedas, are a kind of wild bushmen, and the oldest inhabitants of the Island: "Zvort-van berwe, beandend van Oogen, niet groot van gestalte, maar gezeten rad van Lieden." To these very broad statements, followed at last by John Davy‡ the first definite scientific description resting on autopsy. He says: "Such of the village Weddhas that I have seen were in general small men, between 5 ft. 3 in. and 5 ft. 5 in. high, slender, muscular, and well made; in colour, form, and features resembling the Singhalese. Their appearance was wild in the extreme, and completely savage......Their hair was quite emblematic of their forests: it seemed never to have been cut, or combed, or cleaned; and was long, bushy, and matted, hanging about their shoulders, and shading their faces in a very luxuriant and disgusting manner; nor were their beards less neglected."

Sir Emerson Tennent§ gives the following general description of the Vęddás in the region of Bintęnna:—"They all presented the same characteristics of wretchedness and dejection—projecting mouths, prominent teeth, flattened noses, stunted stature, and other evidences of the physical depra-

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* Percival, *l. c.*, p. 283. † Valentyn, *l. c.*, bl. 49. ‡ Davy, *l. c.*, p. 116. § Tennent, *l. c.*, II., p. 450.

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vity, which is the usual consequence of hunger and ignorance. The children were unsightly objects, entirely naked, with misshapen joints, huge heads, and protuberant stomachs. The women, who were apparently reluctant to appear, were the most repulsive specimens of humanity I have ever seen in any country." Pridham* gives the report of Mr. Bennett, who, during his residence at Hambantoṭa, had two village Vẹddás brought before him. The latter says of them: "They were not more than 5 ft. 2 in. in height, their hands small, but their feet were long and flat; hair matted and tied in a bunch at the back of the head; a large bushy beard, almost covering the face; eyes small, piercing, and constantly in motion to the right and left, and their ears seemed almost as restless as their eyes."

If from these general descriptions we come to details, we observe that all the accounts agree first in this, that the average stature of the Vẹddás is small, not to say very small. Dr. Davy (in the citation by Prichard) says of them: "They are well made and muscular, but of a spare habit; and in person they chiefly differ from the Kandyans in the slightness of their limbs, the wildness of their looks, and their savage appearance." Gillings declares: "The Veddahs are mostly low in stature, but some of them are strong, active men, and most of them appear to be healthy, and little subject to disease." The description of Mr. Bailey† is to this effect: "In appearance the Veddahs differ materially from the Singhalese. They are smaller in every respect, and rather dark, or, more properly, more dusky in complexion. They are short, slightly built, yet very active. Though far from being muscular, their limbs are firmly knit together, and they are athletic and capable of enduring great fatigue. Though spare, they are generally in very fair condition, and look more healthy than many of the Singhalese in the adjoin-

* Pridham, *l. c.*, I., p. 460.

† Bailey, *l. c.*, p. 282.

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ing districts." He measured several of them. The tallest man, and one towering considerably above his fellows, was only 5 ft. 3 in. in height; he was a more civilised Vẹddá from Biụtẹnna. The shortest whom he saw measured was 4 ft. 1 in. He considers the average height of the men from 4 ft. 6 in. to 5 ft. 1 in., and the women from 4 ft. 4 in. to 4 ft. 8 in. In a list of measurements taken at his suggestion, two men are reported as 5 ft. 3 in. and one as 5 ft. 3⅝ in. If these measurements are correct, they exceed, in his opinion, the average measure. Among fourteen Vẹddás of Bintẹnna, the tallest was 5 ft. 3⅝ in., the shortest 4 ft. 6¼ in.; the medium was about 5 ft. ½ in. Of twelve women, the tallest was 5 ft. 2½ in., the shortest 4 ft. 4½ in., the medium about 4 ft. 9 in.

Mr. Hartshorne* gives only two measurements of persons, whom he believes to be fairly average specimens of the race. One of them, Latty, eighteen years of age, was 5 ft. 4¼ in. in height; the other, Bandiey, about twenty-five years old, measured 4 ft. 11¾ in.

If we reckon this in metres, we have the following:—

The tallest man	...	1,638 mm.
The shortest man	...	1,245 mm.

The medium, according to measurements taken in Bintẹnna:—

For the men	...	1,537 mm.
For the women	...	1,448 mm.

The conclusion to which we arrive is that the Vẹddás are a very small, not to say dwarfish, race.

In reference to details of the size, the majority of observers in reality present no facts which indicate disproportionate or imperfect development of the separate members of the body. Only Mr. Hartshorne, who characterised the general appearance of the Vẹddás as "distinctly non-Aryan," asserts that they have short thumbs and sharp-pointed elbows. It would be very satisfactory if these accounts could be corroborated by fresh observations.

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* Hartshorne, *l. c.*, p. 408, note.

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The complexion of the Veddás is dark,—according to most reports, darker than that of their neighbours, the Siŋhalese, of whom Davy says, that their colour varies from light brown even to black. Bailey speaks of the colour as dark, or rather dusky, by which, at any rate, a very deep shade is meant.

The hair of the head and beard Davy describes as long and matted; it is never cut or combed. Sir E. Tennent* says: "Their long, black hair and beards fell down to their middle in uncombed lumps." Sirr† reports that "their hair, beards, and whiskers are never shorn or cleansed, and these redundant tresses hang over their shoulders and bosom in matted masses." Bailey calls the beard "short and scant; the hair of the head, which is not curly, falls in rusty, tangled masses about the face," making the head appear disproportionately large. Later, he speaks of "their wild shaggy hair." When one sees the people, he says, with their rugged, uncombed locks half-covering their faces, they fully represent a preconceived idea of barbarous savages. Hartshorne‡ calls the hair of the head "coarse" and "flowing," and considers it necessary to add that their bodies are by no means hirsute, and that there is no tendency of the hair to converge towards the elbows, or to diverge from the chin, or *vice versâ*.

Through the kindness of Mr. Bastian, two photographs have been sent me of a company of Veddás, which he obtained in Colombo. They represent three men and three women in full figure, but unfortunately of too small a size to give a clear idea of them. This was the party, it seems, presented to the Prince of Wales on the occasion of his visit to the Island. Mr. Hartshorne, who, to be sure, only speaks of two men and three women, is of the opinion that they came from the district of Batticaloa, where the few Veddás still remaining, partly through the influence of the missionaries, partly through

* Tennent, *l. c.*, vol. II., p. 449.
† H. Ch. Sirr, Ceylon and the Siŋhalese. London, 1850, vol. II., p. 210.
‡ Hartshorn, *l. c.*, pp. 408, 409.

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marriage with the Tamils, have lost many distinctive features of their primitive state. "Two of the women," he says, "were very gentle in appearance, and one is reported to have been decidedly pretty; the two men were described as small and rather ape-like." To these descriptions the photographs aforementioned correspond pretty well.

Though these may not be examples of the purely savage Vẹddás, I have nevertheless, in lack of any other representations, asked Mr. Mützel to make a drawing of two men and one woman, from which a woodcut* has been prepared. It shows plainly the growth of the hair; the noses comparatively short, broad at the end, and flattened; the eyes apparently deep-set, and the lips of the younger persons full and bulging; so that it gives a far more vivid idea of the people than any description could furnish. One only of the men has anything like a beard. We see the little apron worn by the men, the great bows they carry, the arrows with the leaf-shaped points, and finally the iron axe stuck in the girdle.

As regards the hair, it is comparatively long with all the six persons, but evidently put into some shape by the help of a comb. The women wear their smooth, slightly waving hair parted in the middle, and so does one of the men, who certainly exhibits his *chevulure* in a somewhat disordered condition. Two of the men have curly hair, which forms a bush about the head, sticking out widely and falling down upon the neck, exactly corresponding to all the known descriptions of them. This makes the head appear very large, especially in proportion to the lean body and limbs. But it must here be particularly remarked that this curly hair is never in small, tight rolls as among the Negritos, and the bush of hair does not in the slightest degree approach the peruke, such as is generally worn by the Viti people, or the Abyssinian tribes; on the contrary, the curly hair is very long, and falls down pretty low upon the

* Not reproduced here.—*Hon. Sec.*

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neck, and it is therefore out of the question to talk of woolly hair. It is a comparatively smooth, simply wavy hair, occasionally curly, but remarkable for its length, and just as Palladius describes it, in a most pregnant manner, ἄκαρτα καὶ ἁπλότριχα. We must here add that he expressly contrasts these smooth-haired people with the Indians (Negroes), whom he calls φριξότριχες. Of the eyes, Davy only mentions that they are lively, wild, and restless. Valentijn calls them burning. Bailey speaks of them as "good, and often full." Only Mr. Bennett asserts that they are small, which probably means deep-set. With regard to their colour, I find nothing said. But the statements are sufficient at any rate to prove to us *that the Vẹddás are a dark, but not actually black, race, and not woolly-haired like the Negro.*

Hartshorne says of the noses, like Sir E. Tennent, that they are flat; and of the lips, that they are sometimes thick. If we add to this their short thumbs and sharp-pointed elbows, there are indications enough by which to distinguish them in a noticeable degree from the Oriental races living in their neighbourhood. Bailey calls the nose "well-shaped, though inclining to be flat; the nostrils wide; the mouth sometimes large; and the lips firm, but rather thick;"—the features of the face, on the whole, "tolerably regular." Sir E. Tennent describes the mouth as "projecting," and the teeth as "prominent."

Before comparing this picture with that of any other of the neighbouring people, I will add some craniological observations. By an especially happy accident I was enabled myself to examine three Vẹddá skulls. I had applied to the German Consul in Colombo, Mr. Ph. Freüdenberg, when he was here, to obtain, if possible, skulls from Ceylon, and especially of the Vẹddás. He wrote to me on February 27, last year, that he was sorry he himself could not do this; but that the Governor and Committee of the Museum in Colombo had declared themselves ready to send here as a loan for six months any skulls I might wish to have from their Museum.

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These arrived in the summer, accompanied with a note from Mr. A. Haly, the Director of the Museum in Colombo. To all these gentlemen I would express my most sincere thanks for their very great kindness in thus furthering my wishes. I will proceed to give a brief description of the skulls.

Skull No. 1.

Mr. Haly appends to it the following note :—

"Presented by Mr. W. W. Hume, Government Agent, Southern Province.

"This skull is said to be that of a Vęddá woman, and was found at Dewilanê near Batticaloa, but there seems to be no evidence to show that it is a Vęddá skull."

Plainly a woman's skull, very white, smooth, and of little capacity (1,250 cub. cm.), with teeth much worn away. Whether an under-jaw belongs to it is questionable, for although the condyloid processes of the one fit tolerably, it yet appears somewhat too short; hence it is omitted in the drawing.* The capsule of the skull is long, narrow, and flat, of a pronounced dolichocephalous index (70·9). The brow is quite straight, but not high, without marked orbital prominences, but with strong *tubera ;* the *glabella* not much sunk, and at the nasal process remnant of the frontal suture one centimetre long. The curve of the parietal bone appears long at a side view; so also the narrow backhead. The *norma occipitalis* shows a slightly ogivalous form, but has, on the whole, a rounded outline narrowing toward the bottom. On the high and pointed *squama occipitalis* we find no distinct *protuberontia externa*, but strong cerebellar arches.

The sutures are well preserved and pretty deeply indented. On either side are temporary interpolations of bone ; to the right an oblong bone extending the whole length, with a slight degree of stenokrotaphy and low *angulus parietalis ;* to the left an imperfect bone, but only in the posterior half of the sphenoparietal suture, beside which the point of the

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* The drawings of the skulls are not reproduced.—*Hon. Sec.*

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ala sphenoidealis comes up high, whilst the *angulus parietalis* is low ; likewise in the under part of the lambdoidal suture on either side and on the posterior lateral fontanel interpolation.

A view of the skull from below shows plainly the length and narrowness of the occipital region. The very large *foranen magnum* is injured at the posterior edge, but can be measured approximately. The articular processes of the occipital bone are situated quite anteriorly, and their fascets turned rather to the outside. Small mastoid processes.

In the front view the forehead appears comparatively broad, the face short and of moderate breadth. Index 83·1 ; therefore chamæprosopic. The very large orbits are likewise broad and extended toward the outside and the bottom, but on the whole rather round in form. Their index amounts to 84·6, and therefore mesokonch. The cheek bones project, and the canine *fossæ* are correspondingly very deep ; on the other hand, the zygomatic arches are not very prominent. The nose is rather high on the face, and somewhat to one side, narrow at its root, the ridge bent in, the aperture large. Index 50, therefore mesorrhine. The upper jaw is, on the whole, low, especially at the alveolar process, which is slightly prognathous ; the facial angle (brow-nasal spine and auricular orifice) measures 82. The palate long and broad toward the back, the alveolar line somewhat in the form of a horseshoe, and the teeth and the alveolar cavities, especially in the front, large. Index leptostaphyline, 75. The (questionable, therefore omitted in the drawing) under jaw, small and low, the rami slanting and feeble, and particularly narrow. The distance of the maxillary angle amounts to only 85 mm., or 10 mm. less than the lower frontal breadth.

(2).—*Skull No. 4.*

Mr. Haly designates it as evidently abnormal, and says of it and the following (No. 5) : "They were procured by the Rev. S. Somanader, the Veddá missionary at Batticaloa. There is a lower jawbone, but I do not know to which skull

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it belongs. Mr. Somanader guarantees these as being the skulls of absolutely pure-blooded Vẹddás, a race, he says, now almost extinct."

The skull, in all probability female, is without a face. Perhaps there belonged to it a senile under-jaw with totally obliterated alveolar cavities, perpendicular and delicate rami and condyles, which, by *arthritis chronica senilis*, are changed; the skull, however, does not give the impression of having belonged to such a very old person. This skull is unusually small; its measure inside is only 1,025 cub. cm.; it is therefore almost nannocephalous. It is, beside being very crooked, especially depressed on the left side posteriorly, short, though rather broad and high. The index amounts to 80·6; it is therefore brachycephalous. The reason for this abnormity is probably an artificial, or accidental, deformation; for although it has a *synosteosis* of the under coronal and the spheno-frontal suture, the main aberrations are in the occipital region. The other sutures are much indented. The *squama occipitalis* is very high, and the lambdoidal angle acute; no *protuberantia externa*. *Tubera* on the brow and parietal bones strongly developed; the brow much arched. *Orbitæ*, so far as their form is recognisable, very large.

Skull No. 5.

This is a male skull, unfortunately also without a face, but in all other respects quite uninjured. Its capacity is considerably greater (1,360 cub. cm.) than that of the two female skulls, but in itself not large. The surface is covered with distinct traces of muscle, especially the back head, where the *facies (muscularis squamæ occipitalis)* show very deep impressions: the *protuberantia externa* is unusually strong and hooked in form, and the *linea semi-circularis superior* makes a strong V-shaped projection. Also the nasal and orbital prominences are strong, although not specially large. The capsule of the skull is distinctly dolichocephalous, with an index of 73, showing in a side view a long finely-

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arched curve, with full high brow and round, strongly projecting back head. The sutures are well preserved; only the under portions of the coronarie and the *spheno-frontalis* are synosteotic. In spite of this the temporal regions are on the whole well formed. From a posterior view this skull also has an ogivalous form, yet with greater breadth of basis. The *squama occipitalis* is high, and the lambdoidal angle very acute. The cerebellar arches large. At the basis the occipital region appears unusually long. The *processus condyloides* are very prominent, and the articular facets turned decidely outward. The mastoid process strong. In a front view the forehead appears broad; the nasal root somewhat deep, but narrow; the bridge of the nose erect; the *orbita* large and slightly rounded; the zygomatic arch not prominent.

Although Mr. Haly says there is no proof that skull No. 1 is a Vẹddá skull, yet I see no reason why it should not be considered as such. Batticaloa is, as we learn from the preceding accounts, known to be the old Vẹddá region; and the statement of Mr. Hume that it is the skull of a Vẹddá woman must have been founded on distinct circumstantial evidence. Certainly it is the skull of a woman; and since also it coincides with other Vẹddá skulls, I do not scruple to accept it as such. The circumstance that there is nothing about it corresponding to the usual idea of the skull of a savage cannot be of any weight, since the rest of the skulls also impress us as being comparatively delicate, not to say civilised. This is a peculiarity which belongs to different unquestionably savage inhabitants of the Eastern Archipelago, and which is especially conspicuous among the Andamanese, the Negritos of the Phillipines, and many other savage tribes in the mountains of Hindústán. The origin of the two other skulls is so clearly testified to by the missionary of that region, Mr. Somanader, that there is no room for doubt.

For comparison we have a not inconsiderable number of apparently well-ascertained skulls now to be found in

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England. Of these, eleven were in possession of Mr. Barnard Davis, who has given notices of them in his "Thesaurus Craniorum": London, 1867, p. 130. Among them are four, likewise from Batticaloa, two from Badulla, and two from Uva. Some are damaged, and must therefore be set aside in our examination. Nine other Vęddá skulls are found in the great anthropological collection in the Hunter Museum; their measures have lately been published by Mr. W. H. Flower in his "Catalogue of the Specimens Illustrating the Osteology and Dentition of Vertebrated Animals contained in the Museum of the Royal College of Surgeons of England": London, 1879, Part I., p. 111. Among them are also those which Mr. George Busle (Proc. Linn. Soc., 1862, vol. 6, p. 166) has earlier described. Of two of these it is stated that they are from Nilgala. The two last and the one from Bintęnna (Badulla) are furnished by Mr. Bailey. A picture of one of the men's skulls from Bintęnna (No. 675) is given in the work of the Messieurs de Quatrefages and Hamy, "Crania Ethnica," Paris, 1876-77. Of two others (Nos. 681 and 682), it is especially said that they may be considered authentic specimens.

In all, we have then, twenty-three skulls for comparison. Among them there is, beside the above-mentioned deformed skull (No. 4) from the Museum at Colombo, another from the Hunter Museum (No. 676), one from the Bailey collection, brought from Bintęnna, of which it is expressly asserted that "it has been unsymmetrically distorted by occipital pressure." These two must, therefore, be excluded from certain examinations. The rest of the anomalies, however important they may be, can in the main be passed over. I will only briefly call attention to the fact that the skull I have described, No. 1 from the Colombo Museum, shows some temporary aberrations, especially interpolations of bone, and also that the skull represented by the Messieurs de Quatrefages and Hamy, No. 675, out of the London Museum, shows distinct stenokraphy.

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The total result obtained is, first, that the Vẹddá skull is uncommonly small, and that occasionally genuine nannocephaly appears in the race.

Of the deformed skull out of the Colombo Museum (No. 4) I have already pointed out that it possessed only a capacity of 1,025 cub. cm. Mr. Flower has discovered even a smaller one, that of an adult woman (No. 679), which measures only 960 cub. cm., and of which he says "that is the very smallest in the whole collection." Here we must particularly remark that it is not a question of microcephaly, in the pathological sense, but of crania justo minora. In order to avoid confusion, I have therefore chosen the name, which I have suggested in an earlier essay, of nannocephalous.

I give in the following a list of some of the measurements, as the fact just signalised is of special importance for the cognisance of races. Regarding the skulls of Mr. Bernard Davis, the first column shows the weight of the sand used in measurement, as given by him; the second and third columns give the reduction of the weights into measures, according to the table made by Mr. Weleker:—

I.—Statements of Mr. Davis.*

No.	Weight. oz.	Men. cub. cm.	Women. cub. cm.
1	64	1,275	—
6	70	1,394	—
7	56	—	1,115
8	65	—	1,295
9	64	—	1,275
10	81	1,614	—
11	59	—	1,175
12	72·5	—	1,444

Average of	3 men's skulls	1,428 cub. cm.
Do.	5 women's skulls	1,261 „
Do.	8 Vẹddás' skulls	1,323 „

* Virchow, "Gesammelte Abhandlungen zur wissenschafhlichen medicin." Frankfurt, A.M., 1856, s. 901.

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II.—Statements of Mr. Flower.*

No.		Men. cub. cm.		Women. cub. cm.		Uncertain. cub. cm.
675	...	1,140	...	—	...	—
676	...	—	...	1,225	...	—
677	...	—	...	—	...	1,235
678	...	—	...	1,250	...	—
679	...	—	...	960	...	—
680	...	1,225	...	—	...	—
681	...	1,260	...	—	...	—
682	...	1,420	...	—	...	—
683	...	—	...	—	...	1300

Average of	4 men's skulls ...	...	1,261 cub. cm.
Do.	3 women's skulls	...	1,145 „
Do.	2 uncertain skulls	...	1,269 „
Do.	9 Vęddás' skulls	...	1,224 „

III.—My own Statements.

No.		Men. cub. cm.		Women. cub. cm.
1	...	—	...	1,250
4	...	—	...	1,025
5	...	1,360	...	—

Average of	3 Vęddás' skulls...	...	1,211 cub. cm.
Do.	20 Vęddás' skulls...	...	1,261 „
Do.	8 men's skulls ...	...	1,336 „
Do.	10 women's skulls	...	1,201 „

Only two men's skulls, viz., No. 10 among Mr. Davis's and No. 682 among Mr. Flower's, exceed 1,400. The first measures 1,614 cub. cm., and is called by Mr. Davis himself "abnormally large"; the other measures 1,420 cub. cm. All the rest of the measurements given are much less,—three between 1,100 and 1,200 cub. cm. and eight between 1,200 and 1,300 cub. cm. The average of 1,261 computed above may, therefore, be esteemed a pretty fair measure.

The amount of the variation is particularly worthy of attention. If we take the two extremes, the woman's skull

* Archiv. für Anthropologie. Bd., *l. s.*, 272.

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of 960 and the man's of 1,614 cub. cm., we have a difference of 654. The different ways of measuring may possibly have increased the difference a little, but not enough to be of any importance.

The length measures stand in a close, but nowise simple, relation to the capacity. In regard to the horizontal extent from the reports of Mr. Davis, I calculate as the average of three male skulls 19·9 English inches = 506 mm., the average of eight female skulls 19 in. = 483 mm., and the average of thirteen skulls altogether 19·2 in. = 488 mm. From the figures given by Mr. Flower accrues an average from five male skulls of 485, of two female skulls of 454, and of seven skulls altogether 476 mm. From my measurements accrues for three skulls an average of 486 mm., a figure pretty near to the others. From all the twenty-three skulls I calculate an average of 484 mm.; from Mr. Davis's skulls and mine, sixteen altogether, an average of 487 mm. The lowest measure (448) was found by Mr. Flower with the nannocephalous girl, the highest (512) with a man; so here too we have a difference in the extremes of 64 mm. The skulls I have described prove here also absolutely typical.

The measurement of the vertical line (right across the head) admits of no exact comparison, since my measure extends from one auditory passage to the other, that of Mr. Davis from the base of one mastoid process to the base of the other. Mr. Flower has not given any vertical lengths whatever. According to my measurements the vertical extent is comparatively small, on the average only 289 mm., which is 197 mm. less than the horizontal extent, of which it is only 5·94 per cent. This figure shows most clearly the narrowness of the skull.

It is very difficult to measure the upper vertical extent (sagittal from the root of the nose across the parietal bone to the *foramen occipitale*) which differs, according to our two statements, in the whole as well as in the single parts. It amounts on the average :—

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	Davis. mm.		Virchow. mm.
Frontal vertical extent	124·5	...	123·0
Parietal ...	127·0	...	121·0
Occipital ...	114·3	...	111·0
Whole sagittal arch ...	365·8	...	355·0

Average ... 360·4 mm.

or reckoned by the percentage of the entire sagittal arch:—

	mm.		mm.
Frontal vertical extent	34·0	...	34·6
Parietal ...	34·7	...	34·0
Occipital ...	31·2	...	31·2
	100·0		100·0

Here the figures agree at least as far as regards the share of the *squama occipitale* in the formation of the roof of the skull: they show that to the *squama* belongs a considerable share, almost a third, and this may well be looked upon as a characteristic.

The relation of the extent in length to the horizontal extent varies only a little in the two measurements. It amounts by mine to 73·0, by Mr. Davis's to 74·9, on the average 74·5 per cent. of the horizontal extent, which, compared with relation to the vertical extent, is a very considerable figure.

Much more homogeneous are the results of the measurements in regard to the form of the head.

The average index of ratio between length and breadth is decidedly dolichocephalous. It amounts with:—

			mm.
Mr. Davis, from 10 skulls, to	...	...	71·3
Mr. Flower, from 8 skulls, to	...	...	71·9
Myself, from 2 skulls, to	...	...	71·9
Total from 20 skulls	...	...	71·6

We have here omitted to bring into the account the two before-mentioned deformed skulls, which have a brachycephalous index; the one in the London Museum has an index of 82·9, the other from the Colombo Museum of 80·6.

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To these must be added the skull of a girl of Batticaloa, about eighteen years of age, and now in the possession of Mr. Davis (No. 803), which he himself calls an "aberrant example," with an index of 78. To what cause due one cannot conceive from the description, since the only thing mentioned about it is that it has a *processus papillaris* before the *foramen magnum*.

Possibly deforming influences were at work among the female Veddás to a greater extent, though in a less noticeable manner. At least we calculate from the figures of Mr. Davis, even omitting the probably deformed skull, a higher index for the female than the male skulls. Mr. Flower and myself, however, arrive at the opposite result, excluding the deformed skulls, viz.:—

	Davis.		Flower.		Virchow.	
		mm.		mm.		mm.
For Men ...	(3)	69·6 ...	(5)	70·9 ...	(1)	73·0
For Women ...	(6)	71·0 ...	(1)	69·9 ...	(1)	70·9

In taking the average of the two sexes together, however, the difference disappears, as then Mr. Flower's and my own lower figures count for something, viz.:—

		mm.
Men ...	9 skulls ...	70·7
Women ...	8 skulls ...	70·8

At any rate, we have among the number (twenty in all) which come into the calculation, only four belonging to mesocephaly (index of 75 : 1—80). Among the remaining sixteen, however, are seven whose index amounts to something under 70, which are therefore hyper-dolichocephalous. The minimum amounts to 66 (Davis). Quite correct also was Mr. Davis in saying (*l. c.*, p. 132) that the Veddá skulls are narrower than those of African Negroes, and sometimes as narrow as those of the New Caledonians. The relation of the single parts of the skull to the whole length = 100 is somewhat different. With the male skull No. 3 the horizontal length of the occipital region is greater, and the frontal basilar length less. If we indicate the relation of the

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occipital length to the whole length by *a*, and that of the basilar length (outer edge of the *foramen magnum* to the root of the nose) by *b*, we obtain for the skull :—

			No. 1.		No. 2.		No. 3.
			mm.		mm.		mm.
a	...	...	28·2	...	27·8	...	32·4
b	...	...	51·9	...	55·1	...	48·6

Corresponding to the smallness of the skull, the greatest length is throughout little: dolichocephaly is less indicated by great length than by want of breadth. Among all the skulls there is only one—a male skull (Davis, No. 805)—which has a length of 190 mm. (76 English inches). With all the rest it is less, with the majority not more than 180. The greatest breadth, likewise, comes up in only one skull to 140 mm.; the next highest figure is 135—the measure of the male skull from the Colombo Museum. But the majority do not even reach 130. All the more extraordinary is the relatively considerable height. Only twice do we find height less than the breadth. The skull (No. 683, Mr. Flower's) which shows some other aberrations as well, has a breadth of 140 mm. and a height of only 135 mm.; and a male skull (Davis, No. 804) that shows various synosteoses, and is clinacephalous, has a height (5 in.) a little less than the breadth ; in all the other cases the height exceeds the breadth, and not set down very considerably—in one case (Flower's, No. 680) by 14 mm. The greatest height (136 and 137 mm.) is that of two male skulls —one of Mr. Flower's and one of mine.

The index of ratio between the length and height is, therefore, greater than between the length and breadth. After excluding the two deformed skulls, it amounts to an average of :—

		Men.			Women.	
Mr. Davis	...	(3)	. 73·6	...	(7)	. 76·2
Mr. Flower	...	(5)	. 75·0	...	(1)	. 71·1
Mine	...	(1)	. 74 1	...	(1)	. 72·9
In the whole		(9)	. 74·9		(9)	. 75·3

The average from the collection amounts to 74·9. We

cannot therefore exactly speak of lypsicephaly, though the form comes very near to this type. If we reckon orthocephaly at 75, or even at 74·9, the Vẹddá skull on an average falls below this category.

The height of the ear, which has only been taken by me (vertical distance of the upper edge of the outer auricular passage from the parietal bone), is likewise considerable, particularly in the male skulls, amounting to 120 mm. In this case the index of the height of the ear amounts to 64·9, whilst in the female skull No. 1 it reaches to only 60·4, and even with the deformed one (No. 4) only to 63·0.

As regards the formation of the face, I find, except the already-given descriptions, little osteological support. Of single regions I mention the eye-cavities and the nose.

The orbital index was, in the one case which afforded me an opportunity of taking the measurements, 84·6, exactly the same figure which gives the average in the statements of Mr. Flower. The single cases certainly show very considerable differences, for, according to Mr. Flower, we have among eight skulls: two indices below 80, two between 80 and 85, and four over 85 up to 91·7. Separating the sexes, we have from four male skulls an average of 85·1, from two female 84·3, a difference scarcely worth mentioning. On the whole we may therefore assume that the orbital formation is mesokonch.

The nasal index, which I stated at 50, is, according to Mr. Flower, who compared seven cases, 52·2; it is therefore mesorrhine, bordering on platyrrhine.

There certainly seems to be a not inconsiderable difference in sex, since the two female skulls cited by Mr. Flower were platyrrhine (56·1 and 57·8); and, on the other hand, among the male skulls one, if not two, were leptorrhine (46·5 and [?] 46·7), and only two platyrrhine (54·0 and 54·3). The depressed form of the bone of the nose is plainly seen in Table 1, Fig 3, and in the profile drawing by Messrs. De Quatrefages and Hamy. The previously given descriptions

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of Sir E. Tennent, Bailey, and Hartshorne, which emphasise the flatness of the nose, are in unison with this; and the pictures I have given, taken from photographs, also show plainly the depressed form of the root of the nose and the breadth of the rings.

The face altogether seems to be low, flattened throughout. The front view of the skull given by the Messrs. de Quatrefages and Hamy in their pictures exhibits this in a splendid manner. I obtained an index (relation of the entire facial height to the breadth of the zygomatic bone) of 83·1.

From the measurements of Mr. Davis I calculate as an average of five skulls almost the same figure, viz., 83·8. According to this the type is therefore, on the whole, chamæprosopous; and, as far as I can now discover, with the women more than with the men. The skulls of Mr. Bernard Davis show :—

No.		Men. mm.		Women. mm.
313	...	88·2	...	—
801	...	87·5	...	—
802	...	—	...	82·9
803	...	—	...	80·8
804	...	—	...	80·0
Average	...	87·8	...	81·2

Notwithstanding the depression of the faces, they are not actually broad. It is because of the slight prominence of the zygomatic arches and bones which Mr. Bernard Davis has already mentioned in contrast to the African races. Only the London skull, of which Messrs. de Quatrefages and Hamy have given us a picture, appears comparatively broad, and chiefly, it would seem, owing to the strong development of the *processus zygomaticus* of the maxillary bone, and the consequently increased size of the lower zygomatic protuberance.

Mr. Flower calculates, besides the alreolar index, the means by this, the present relation of the "basilar alvesli" length

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(distance of the anterior edge of the alveolar process from the *foramen occipitale magnum*) to the "basinasel length" (distance of the root of the nose from the *foramen magnum*): the latter, supposed, = 100. The average of six skulls gives a figure of 96·3. I obtain only 93·4 for the female skull from the Colombo Museum. Separating the sexes the computation of Mr. Flower is:—

No.		For Men. mm.		For Women. mm.
675	...	93·5	...	—
676	...	—	...	93·0
678	...	101·0	...	—
679	...	—	...	96·5
680	...	96·9	...	—
681	...	97·1	...	—
Average	...	97·1	...	94·7

According to this it might appear as if prognathy was greater among the men than among the women, but we must reserve a final opinion on this point, since the measurements of individual skulls show such considerable differences, especially with the males. At any rate, prognathy is very slight. Mr. Bernard Davis goes so far even as to call the Veddá skulls tolerably orthognathous.

With regard to the proportions of the rest of the body, I have a few more statements from Mr. Hartshorne about two Veddás, which I subjoin, after having changed them into metre measure:—

		Latty, about 18 years old. mm.		Bandiey, about 25 years old. mm.
Height of the body	...	1,631·91	...	1,517·59
Circumference of the head around middle of the brow	...	514·33	...	514·33
From top of forehead to end of chin	...	168·25	...	177·80
Across face	...	133·34	...	171·42
Shoulder to elbow	...	279·39	...	323·81
Elbow to wrist	...	254·00	...	219·05

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		Latty, about 18 years old. mm.		Bandiey, about 35 years old. mm.
Wrist to point of middle finger		196·82	...	174·59
Size of upper arm around the biceps	right ...	260 34	...	241·28
	left ...	263·51	...	241·28
Size of forearm	right ...	222·22	...	222·22
	left ...	222·22	...	222·22
Chest, breadth	...	787·39	...	749·27
Length of upper thigh	...	425·41	...	419·07
From knee to ankle	...	412·73	...	393·67
Size of the calf	...	298·41	...	292·07
Sole of the foot	...	241·28	...	222·22

It is very probable that errors have crept into some of these measurements, especially with regard to the upper arm (shoulder to elbow), which, with the smaller man, is stated to be 44 mm. longer, whilst the whole arm is almost 13 mm. shorter. The breadth of the face also given for Bandiey, the smaller man, is not only 38 mm. more than for the much larger Latty, but of an incredible size altogether. We must, therefore, be very cautious in using these figures. Tolerably constant is the relation of the sole of the foot to the height of the body : with Latty it is 6·7, with Bandiey 6·8, contained in the height of the body. This is quite a normal relation. Mr. Bennett says the hands of the Vęddás are small, but their feet long and flat. This may be so : one would hardly think it, however, from the measures given. Of the remainder of the measurements I have not much to say, especially as with some of them, *e.g.*, the length of the upper arm, it is not said where the measure begins and where it ends. This much at least we may conclude from the statements, that the single parts may be assumed to be well proportioned. Of special interest is only the size of the arm, whilst there is a marked difference in general between the right and the left arm. We find here on both sides the same figures—indeed, with Latty the size of the left upper arm is a little more than 3 mm. larger than that of the right. This is to be accounted for by the greater exercise of the left arm,

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which is specially strained in drawing the very heavy bow, as has been described by various travellers. Mr. Bernard Davis has in his collection the upper thigh and upper arm of a Vẹddá: the former is 17·2 in. = 436·8 mm. in length, the latter 12 in. = 304·8 mm. This was evidently a very strong individual: the length of the upper thigh exceeds even that of the two men measured by Mr. Hartshorne (425 and 419 mm.). On the other hand, the length of the upper arm, according to Davis, does not coincide with the figures given by Hartshorne, and this is additional proof of the inexactness of his measurements.

The comparison of the Vẹddás with their neighbours on the Island is not a little increased in difficulty from the lack of sufficient information with regard to the relative physical condition of the latter. Even the best describers limit themselves in the main to a few words. Regarding the more civilised tribes, as already well known, they at most therefore institute only comparisons with the continental tribes of Hindústán or with the European. Osteological material is also comparatively scanty in the European collections, and even what there is appears to me as rather unsafe. I have, through the kindness of Consul Freüdenberg, received three skulls of Siṇhalese and three of the Tamils; but examination proves one designated as the skull of a Siṇhalese child to coincide so exactly with the Tamils, that it seems very doubtful indeed if this is correctly stated. The inhabitants of the low lands upon the Island have so frequently trespassed on each other's territory, and become so intermingled in life, that their skulls may have been confounded after death. Hence I offer the following remarks with all reserve, and principally with the aim of provoking, if possible, more exact information and the sending of better material. In particular I must indicate, as the greatest desideratum, the need of satisfactory photo-

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graphs,—especially half-lengths,—not too small (profile and front face), in the right horizontal position.

In our comparisons the genuine Siṇhalese and the Tamils come chiefly under consideration. Only collaterally can the descendants of the immigrant Arabs (Moors, Moormen), Malays, and still less Chinese, Burmese, Aryan Indians, African Negroes, and Europeans, be brought in. The two first-named tribes are so predominant, through the extent of territory they occupy, as well as from their numbers, that, apart from their almost exclusive historical claims, they must be specially considered.

The Siṇhalese.

They occupy in the main the south and south-west of the country. According to Sir E. Tennent* the inhabitants of the south coast from Galle to Hambantoṭa are the purest Siṇhalese. This part formed an important division of the old province of Ruhuna, which was very early colonised by the descendants of Wijayo ; they neither intermingled with the Malabars nor had any intercourse with them whatsoever. Unfortunately Sir E. Tennent gives no actual description of the people. He only speaks incidentally of their build, and their hair ; what chiefly caught his attention was their inclination to an effeminate mode of arraying themselves. This is especially conspicuous in the way of wearing the hair, of which he gives a picture ; but adds, this applies only to the people of the south-west coast, and not to those in the interior or in the north or east. They let the hair grow long, comb it *à l'impératrice*, high from front to back, and bringing it up from the nape of the neck form a roll (*koṇḍé*) on the protruding part of the back head, fastening the whole with combs. Even Ptolemy has mentioned the long hair in Taprobane, and Agathemerus asserts that the men of Ceylon let their hair grow as long as it will, and roll it into a coil on the top of the head in the fashion of women.

* Tennent, *l. c.*, vol. II., pp. 106–112.

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Of the children Sir E. Tennent says they are beautiful, with wavy shining hair. He says a group of children in their nakedness look like living bronzes. The men also have delicate features and slender limbs, are frequently beardless,* and wear around the hips a piece of cloth (*comboy*) like an under petticoat, so that altogether the impression they make is womanish. Finally, he adds a notice of them from a Chinese book of travel by Hiouen Thsang, in which the Mongolian expresses his amazement at their prominent noses, by saying the Siṇhalese have a bird's beak on a human body.

This is about all that I find in Sir E. Tennent concerning the Siṇhalese. The few paragraphs devoted to the inhabitants of Ceylon by Mr. Von Schlagintweit† coincide with this. Somewhat more definite, though very superficial, are the reports of earlier authors. Valentyn‡ says: "De Cingaleezen zijn niet heel swart, maar bruyngeel, lang en open van ooren, niet klock von gestalt, door de bank wat mager, zeer zwak van leden, geschwind van licham en vrijser ruf tig van geest." Wolf§ declares outright "the Siṇhalese have a black skin." Percival‖ ascribes to the Ceylonese a stature of middle height, about 5 ft. 7 in., and says the colour of the women approaches to yellow. Selkirk¶ calls the eyes of the Siṇhalese bright black, and says the hair is long, black, and fastened into a knot. The insides of the hands and feet are white, the rest of the body black. The people in the interior seldom shave the beard, but those on the coast do. Sirr** says the men are under middle height, something like 5 ft. 6 in. on an average, and well propor-

* These statements are said to be found in the history of Tambulus. Diodor, Lib. 2, cap. 36.

† Herman von Schlagintweit, Sakunlunski. Reisen in Indien and Hoch Asien. Jena, 1869. Bd., *l. s.*, 213.

‡ Valentyn, *l. c.*, Bl. 43.

§ Wolf, *l. s.*, 155.

‖ Percival, *l. s.*, 222.

¶ Selkirk, Recollections. London, 1884, pp. 58-59 of Ceylon.

** Sirr, *l. c.*, vol. II., p. 38.

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tioned. Their colour varies from clear, yellow-brown to black; hair and eyes the colour of ebony. The Kandyans are darker, more powerful, and of better growth. Philalethes,* who specially refers to Valentyn, says the colour of the Siŋhalese is not quite black, but of a deep chestnut, suffused with a yellow tint. Their ears are long and open, their bodies not powerful, but slender and agile.

Much more exact is the description which Mr. Davy† gives. He divides the Siŋhalese race into three great tribes: the genuine Siŋhalese, the Kandyans, and the Vẹddás. In describing chiefly the inhabitants of the interior of the Island, "the highlanders," he says that they are in build, speech, manners, customs, religion, and government complete Indians. Like them they are distinguished from Europeans less in the features than in some trifling characteristics of colour, size, and form. The complexion ranges from light brown to black. Also the colour of the hair and the eyes varies, although not so often as that of the skin; black hair and eyes are most common, and brown hair and eyes less uncommon than gray eyes and red hair, and the light-blue or red eyes and flaxen hair of the Albinos. In size, the inland people exceed the low-land Siŋhalese and the most of the natives born on the coast of Coromandel and Malabar, but they do not attain the height of the European. Their average is somewhere about 5 ft. 4 to 5 in. They are clean-made, with neat muscle and small bone. For Indians they are stout, and have, as a rule, well-developed chests and broad shoulders, especially in the mountain districts, where they, like other highlanders, have rather short but strong and very muscular thighs and legs. Hands and feet are in general very small,—indeed disproportionately so compared with ours. The form of the head is good, but perhaps rather longer than among Europeans. Their features are commonly neat and often handsome, their countenances intelligent and

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* Philalethes, *l. c.*, p. 231.

† Davy, *l. c.*, p. 109.

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animated. Nature has given them a wealth of hair, which, in general, they allow to grow to considerable length on their faces, as well as heads, since in their opinion a beard, so far from disfiguring, adorns the face. The women as a rule are well formed and good looking, often handsome. According to their opinion a beautiful woman should have the following attributes:—Hair luxuriant, like the tail of a peacock, long, reaching to the knees, and terminating in graceful curls; eyebrows like the rainbow, and eyes sapphire blue, or like the petals of the blue *mánil* blossom; nose like a hawk's beak, and lips bright and red as coral or the young leaves of the *ná* tree; teeth small, regular, and closely set as the buds of the jasmine; neck full and round; chest capacious, and breasts firm and conical, like the yellow cocoanut; waist almost small enough to be spanned by the hand; hips wide; limbs tapering; the soles of her feet without hollows, and the surface of her body soft, delicate, smooth, and rounded, without protruding bones and sinews.

Davy has the great merit of having added to his work a series of pictures, which illustrate more clearly many of these particulars. On Plate 6 is found a coloured group of Kandyans, after a drawing by Lieut. W. Lyttleton, which shows very clearly the dark-brown complexion of the common people by the side of the lighter yellowish-brown tint of the Disávé: the faces are comparatively long and narrow, the noses arched and very prominent, the upper lips short, and the muscles about the mouth delicate. On Plate 4 likenesses are given, which were drawn from ivory figures carved by native artists; here the faces are shorter and somewhat broader; the noses very prominent and arched, having an almost Jewish expression; the lips (especially of the women) full and bulging, but without any approach to prognathism.

Cordiner* describes the Siṇhalese as of a slender make, rather below the medium height, with slight but well-shaped

* Cordiner, *l. c.*, vol. I., p. 94.

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limbs, and with regular features of the like form with the Europeans; their colour, although varying in shade, not so dark as that of the Indians on the continent; the eyes black, but the whites of them strikingly clear; the hair long, smooth, and black. Among the higher classes the complexion is so light that it seems lighter than that of brunettes in England. In all classes the inner surface of the hands and feet is uniformly white. Of the Kandyans Cordiner* says that they differ no more from the Siṇhalese than the mountaineers of other lands from the dwellers on the coast. They are of a stouter make and fairer complexion, but not taller. Their manners are less polished, and the custom of wearing a beard increases the natural wildness of their appearance.

If we compare these descriptions with those already given of the Vęddás we find in reality but few points of difference. The complexion of the last may be on the average somewhat darker, but it varies apparently within the same limits. In regard to this the testimony of Dr. Davy especially is of the highest importance. The swarthiness which Mr. Bailey emphasises of the Vęddás is to be ascribed at least in part to their lack of cleanliness. It is equally doubtful if the hair differs; put the well-dressed, carefully-combed, smooth hair of the Siṇhalese, which is only curly at the ends, beside the neglected, dishevelled, entangled, but not curly hair of the Vęddás, which hangs down so far and sticks out all round, making the head appear very large, and one is inclined to conjecture that the difference here is owing to culture rather than to original peculiarity. The average height of the Siṇhalese seems to correspond to about the height of the tallest Vęddá: they are somewhat shorter than Europeans.

Among the characteristics cited there is in reality only one which seems to have made a very decided impression on every observer, namely, the form of the nose, about which even the old Chinese furnish reports. Whilst with the Siṇhalese it is

* Cordiner, *l. c.*, p. 131.

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very prominent, resembling an eagle's beak, and therefore rather thin and narrow, with the Veddás it is always described as flat, and with widely-distended nostrils. Add to this the thick and projecting lips and the large mouth, and perhaps also the comparative shortness of the Veddá face, there then remains, as Mr. Hartshorne* has already pointed out, only a few facial characteristics for diagnosis. Whether this is correct the future may teach us, provided exact descriptions (and above all large photographs) of the Veddás are furnished in time. Meanwhile we may state that the *Sinhalese also belong to a dark—perhaps best described as a brown—smooth-haired, and not (or only a very moderately) prognathous race.*

How is it now with the osteological indications? Literature in this regard offers somewhat more explicit statements, although exclusively for skulls. Here also it is the merit of Davy to have furnished us with exact information. He asserts the Sinhalese skull to be longer than the European. As proof of this he gives on Plate 3 the drawing, side and front view, of the skull of a Sinhalese chief from a secluded region inland. This skull is long, moderately high, with abruptly rising forehead, and broad, square back head, flattened at the sides up to the temples; the zygomatic arches prominent, the eye-cavities rather broad and low, and tending to square, but widening towards the bottom and the outside; the nose narrow and prominent, with bridge slightly bent in; the face short, with a low, slightly projecting upper jaw.

A more recent description of a *cranium Cingalensis* is given by Gerard Sandifort.† The skull was furnished by Van Hassem an Brugmans, and is at present in the Anatomical

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* Hartshorne, *l. c.*, p. 409, says: "The general appearance of the Weddas may be described as distinctly non-Aryan. The comparative shortness of their thumbs and their sharply-pointed elbows are worthy of remark, as well as their flat noses, and in some cases thick lips, features which at once distinguish them in a marked degree from the Oriental races living in their vicinity."

† Gerard Sandifort. Tabulæ Craniorum Diversarum Gentium. Lugduni Batav. 1838 (*c. f.* Mus. Anat. Acad. Lugd. Bat., 1827, vol. III., p. 39, No. DLXXXIV.).

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Museum at Leyden. There is also a great number of measurements given, but unfortunately the greater part of them are of no use for our purpose. The capacity is stated at 39 ounces of millet. Judging from the picture it is a very powerful skull, with a long, strong face, very prognathous, having large, very prominent teeth, large and broad lower jaw, the nose long, high, and thin, the eye-cavities low, imperfectly rounded, and very much aslant. As their height is given at ·031, the breadth at ·041, the orbital index 75·6 would be chamaekonch. The inter-orbital distance is mentioned as ·024. The author himself describes the cranium as oval, with a very high crown, sides very much flattened, with slightly projecting *tubera*, the back head oblong and by no means spheroid, the under parts rather flat; the eye-cavities oblong in the tranverse axis, the *fissura orbitalis posterior* wide, the ends (*vertices*) of the upper jaw hollowed out (*excavatus*), on the lower rims cut out (*exsectus*), and passing obliquely into the likewise oblique and projecting alveolar process of the maxillary bone; the palate much arched (*fornicatum*) and oblong. I remark that its length is stated at ·059, its breadth in the region of the third molar at ·041, in the regim of the præ-molars at ·039; out of the first two measures would result a palatal index of 69·4: consequently an extremely leptostaphyline measure, which indeed does not afford an exact comparison with my measure taken in the region of the second molar. The vertical height of the skull is stated at ·145, the tuberal parietal breadth at ·126, the jugal breadth at ·138, and the distance of the maxillary angle at ·110.

I find another statement in the catalogue of the Vrolik Museum in Amsterdam,* where, under No. 66, is mentioned the skull of a native of Ceylon, which Professor Bernard had furnished. It is compared with the *cranium Cingalensis* of Sandifort, from which it is said to be distinguished chiefly by its less prognathous jaw. It is described as a fine, strong, dolichocephalous and somewhat prognathous skull, the

* Musée Vrolik. Catalogue par J. L. Dusseau. Amsterdam, 1865, p. 22.

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forehead long, but of little height, considerably flattened at the sides, the cheek-bones strong, and all the muscle *epiphyses* well developed. From the measures given we calculated an index of ratio between length and breadth of 72·2, between length and height of 75, and a palatal index of 73·7.

Mr. Welcker * gives in his craniological tables the average index figures for five Siṇhalese skulls, without, however, saying where these are at present to be found; probably the above-mentioned Dutch specimens are among them. He states the breadth to be 73·4, the height 77·2.

A large number of Siṇhalese skulls are brought forward by Mr. Davis,† in fact, a whole dozen. One of these, however, is expressly said to be probably a hybrid of Malabar and Siṇhalese, and must therefore be excluded. Of the remainder one is from Panaduré, one from Kandy, one from Negombo, one from Colombo, the others unascertained. Half are male and half female. The one (No. 982) which is called klinocephalous and has a *processus papillaris* before the opening of the back head, according to Mr. Davis shows "a degree of mikrocephaly," but as its capacity amounts to 1,474·6 cub. cm. we are not quite justified in such an assumption. I give below a short list of the main results obtained :—

The number of the skull.	Capacity.		Index of Longitudinal Breadth.		Index of Longitudinal Height.	
	♂	♀	♂	♀	♂	♀
315 ...	—	1175·7	—	72	—	70
979 ...	—	1394·9	—	74	—	78
980 ...	1235·5	—	76	—	84	—
981 ...	—	1355·1	—	75	—	74
982 ...	—	1474·6	—	65	—	72
983 ...	—	1494·6	—	70	—	80
984 ...	1673 9	—	75	—	76	—
1007 ...	1614·1	—	72	—	70	—
1008 ...	1693·8	—	73	—	74	—
1009 ...	1275·4	—	72	—	76	—
Medium ...	1498 5	1378·9	73·6	71·6	76	74·8
Total average 10)...	1438·8		72·4		75·4	

* Archiv. für Anthropologie, 1886, Bd. s. 154, 157.

† J. Barnard Davis. Thesaurus Craniorum, p. 132.

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The average indices agree very nearly with the indices of the skulls in the Vrolik Museum. Dolichocephaly is very pronounced, though not so strongly as with the Vęddás; the height agrees pretty well with the Vęddás, but the capacity is much greater.

A wholly different description of the skull of a Siŋhalese is given by Mr. Zuckerkandl.* This skull was brought over by the Novara expedition without any statement whatever of its origin. It has a capacity of 1,505 cub. cm., and an index of ratio between length and breadth of 86·1. It is therefore hyper-brachycephalous. We may assert without hesitation that it is either in a high degree pathological or outright not the skull of a Siŋhalese. The latter assumption is supported by the fact that the incisors and canine teeth of the upper jaw are filed flat,—a phenomenon nowhere mentioned as seen among the Siŋhalese, but which points very clearly to a Malayan origin. The assumption of a pathological, perhaps deformed formation, is supported by the fact that the cranium is asymmetrical, the forehead flat and retreating, while the *squama occipitalis* is pressed flat to such a degree that the upper half is sunk in "almost in the form of a wave." We may therefore exclude this skull from comparison.

With regard to my own skulls, I have already said that probably a child's skull, marked as Siŋhalese, will have to be excluded; but as it is so distinctly stated to be Siŋhalese I will here describe it with the rest.

Skull No. 1 (Table II.).

A juvenile male skull, seemingly rather large, but without under jaw. *Synchondrosis spheno occipitalis* closed. Wisdom teeth broken out; the front teeth have later fallen out; the remaining molars and the first premolars are very large, and only a little worn on the crowns, but covered with a thick black crust (betel). The points of attachment of the

* Reise der Osterreichischen Fregatte Novara. Anthropologischer Theil. Erste Abtheilung. Cranien der Novara Sammlung, beschrieben von E. Zuckerkandl. Wien, 1875, s. 24.

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muscles strong, but the frontal eminences not very prominent. The bones are yellow-brown, smooth, shiny, and hard.

The skull is in reality smaller than it appears; it has only a capacity of 1,110 cub. cm. The index of ratio between length and breadth is 71·3, and is strongly dolichocephalous, between length and height 72·5, orthocephalus.

In the *norma verticalis* the roof of the skull appears long and narrow, tapering toward back and front, moderately phænozygomatic, the *tubera parietalia* spreading out broadly. The skull is unsymmetrical (plagiocephalic), especially behind and below, where upon the left side, but still on the parietal bone, there is to be observed an oblique flattening, whilst the right side is more fully rounded out. In front the form is more regular, although the right half of the forehead is somewhat awry, and the right zygomatic arch shorter than the left; the nose diverges a little to the left, and the palatal suture at the back part turns a little to the left. The sagittal suture, also, is not exactly median. Many signs are visible of premature *synosteosis:* thus, on either side, but more extensively on the left, in the midst of the side parts of the coronal suture, and at different points of the sagittal suture, of which the right emissary is wanting and the left very small. The lower side parts of the coronal suture are quite obliterated on the left for a length of 30 mm., and on to the right of 22 mm. The open sutures are comparatively simple, yet the sagittal suture in its middle, and the lambdoidal suture, have pretty large and broad indentures. The latter at the point is very much depressed, and at the sides, especially the left, there are several wormian bones. On either side, in the region where usually the *sutura transversa occipitis* begins, we find a wormian bone reaching to the parietal bone, larger on the left side, but in its middle and upper part synosteotic.

In a lateral view of the skull it appears long and low, the brow itself low and rather sloping, the *tubera frontalia* only tolerably distinct, the front of the skull long and

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rising abruptly. It reaches its height at the coronary suture ; behind this is a slight depression ; the vertical height, a finger's breadth behind the *coronaria.* The back slope of the parietal curve begins in the region of the *tubera,* and is very long ; the *squama superioris* is strongly convex. The temporal *fossæ* large, and reaching to the *tubera parietalia,* and beyond the lambdoidal suture. The front part of the temporal *fossæ* uneven and rugged. The *squama temporalis* on either side flat and high, especially on the left. On either side a strong *processus frontalis,* which is only somewhat indistinct because of the extensive *synosteosis* of the *coronaria.* The *ala temporalis* low and quite overlaid by the very broad process, which extends from the *squama temporalis,* pretty regularly on the right, somewhat jagged on the left, but on both sides pointed in front. In consequence of this stenokrotaphy we find, however, that the very much depressed place is pretty low down upon the *ala,* indeed, immediately at the juncture of the *sutura spheno frontalis, zygomatico frontalis,* and *spheno zygomatica.* The process appears more pointed on the left, on the right almost trapezoidial. The measures amount to :—

		Right.		Left.
Length of *proc. temp.* upper	...	15 mm.	...	12 mm.
Do. under	...	10 mm.	...	9 mm.
Breadth of *ala temp.* ...	...	19 mm.	...	18 mm.

In the *norma occipitalis* the contour of the skull is almost pentagonal, the side parts going almost straight down, only diverging at the base, the roof with slightly arched lateral parts, the base tolerably straight. The *squama superioris* strongly prominent and flattened at the sides. No *protuberantia occipita externa.* The *linea semicircularis superior* and *inferior* strongly marked : *linea suprema* very faint. We find on either side, however, and especially strong on the left, a deep abrupt break between the *facies muscularis* and the *facies laevis,* which in its lower part follows the direction of the *linea superior,* then makes a deep bend toward the mesial line, and ends parallel to the *linea suprema,* right underneath it. In this way is formed on either side a long

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deep-lying tongue of the *facies laevis*, which reaches the *sutura transversa*. The cerebellar *fossæ* are tolerably rounded out, the *facies muscularis* more deeply marked. No large *emissaria mastoidea*, but instead of this a larger *foramen* on either side, near the *crista perpendicularis*. The *foramen magnum* is rounded posteriorly, more oval anteriorly, 31 mm. in length, 26 in breadth, therefore 83·8. The articulation prominent and bent; *processus mastoides* poorly developed, with a deep depression; *processus styloides* large. *Apophysis basilaris* lying somewhat flat; *processus pterygoides* with spreading *lamina externa;* deep *fossæ* for the lower jaw.

In the *norma frontalis* the middle and anterior part of the head seems high, the region of the fontanelle raised, the face, however, short and narrow. Orbits low and almost four-cornered; index 76·9, therefore strongly chamaekonch. *Fissura spheno maxillaris* spreading out in front. The outer edge of the orbits bent inwards a little just below the *sutura zygomatico frontalis*, inasmuch as here the *processus frontalis* of the malar bone is somewhat bent inward posteriorly. The nose low, narrow above where it articulates with the broad nasal process of the frontal bone, the bridge bent in and somewhat rounded, but prominent and aquiline, the aperture broad below, narrow above, hence triangular; index 57·7, therefore platyrrhine; *canine fossæ* full, *foramina infraorbitalia* large, and especially the left one, communicating with a roundish depression on the surface of the *canine fossa*. Alveolar process short, in the middle 13 mm. long, obliquely prominent. *Alveolæ* broad, palate large, especially long; index 75·4, therefore leptostaphyline. The *sutura transversa palati* very much forward, 17 mm. in front of the *spina nasalis posterior*, which is short and rounded away. The alveolar process is widely curved in front, almost straight at the sides, slightly converging behind. Hence the palate long, of prognathous character, and somewhat pithecoid in form. The malar bones on both sides have a fissure posteriorly beginning at the *sutura*

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zygomatico temporalis, 6 mm. right, 5 mm. at the left, and 3 *foramina zygomatica*. The *tuberositas molaris* is of moderate size, and belongs mainly to the upper jaw; the *tuberositas marginalis temporalis*, especially the left, is very strongly developed, and the bone very much bent inward below.

Skull No. 2.

A senile, wholly toothless, probably male skull, without lower jaw, of very moderate capacity (1,200 cub. cm.), but strongly dolicho-orthocephalic (ratio of length and breadth 70·2, of length and height 73·2).

It shows throughout a tendency to *synosteosis;* the sagittal suture is wholly obliterated—not a trace of it; in the region of the fontanelle a broad projection above the frontal bone, as sign of early obliteration. The *emissaria* are present, but very near together (distance 10 mm.), the right considerably enlarged. The coronal suture obliterated in the lower part to a considerable extent on the right; on the left it is perfectly simple, and in process of obliteration. At the right the posterior part of the *spheno frontalis* is overgrown; the *spheno parietalis* on both sides indistinct. The lambdoidal suture at its angle shows traces of obliteration.

In the *norma verticalis* the skull is very long and narrow, strongly arched in front, narrowed behind, with very prominent lambdoidal angle, for the rest phænozygomatic. The tuberosities very broad and prominent, therefore somewhat klinocephalic in form. At the right, on the parietal bone, just behind the coronal suture, several flat *exostoses*.

In the *norma temporalis* the skull appears rather long than high. The middle of the parietal curve is flat, its frontal division strongly arched, the posterior obliquely sloping downward to the lambdoidal angle; then, however, much arched at the *squama superioris*. Eminences rising even to the parietal prominences and the lambdoidal suture. *Squama temporalis* flat. *Alæ* depressed towards the centre, especially the right one, which is very much narrowed

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below. At their extremities posteriorly an irregular, trapezoidal *epiptericum*, 11 long, 8 high, with indented edges, which towards the front are somewhat indistinct. The *angulus parietalis* is very short, and as far as can be judged with the *synosteosis* of the lower part of the coronal suture, and the adjoining part of the *spheno frontalis*, is prevented from coming in contact with the *ala* up to a distance of 4 mm.

	Right.		Left.
Direct breadth of the *ala sphen.* above ...	21 mm.	...	24 mm.
Do. do. below ...	12 mm.	...	15 mm.

The *norma occipitalis* shows very high straight sides, with simple flattened arching of the roof, and a straight base. Lambdoidal sutures jagged. *Squama superioris* strongly arched, but short, somewhat flattened laterally and below. Plainly marked *linea semicircularis suprema.* At the upper end of the *crista perpendicularis* a large irregular protuberance, very deep depression below the *lineæ semicirculares superiores.* Large cerebellar archings with depressions between well-developed *emissaria mastoidea.*

Basis cranii long, and protruding behind. Mastoid process small, with deep fissures. The *foramen magnum* small, 31 mm. long, 28 mm. broad, index 90·3, very prominent articulating surfaces, very long and strong styloid processes. In the centre of the basilar *apophysis* a large basilar *foramen* entering obliquely posteriorly, which corresponds to a deep irregularly sinuous *sulcus* on the surface of the *clivus Blumenbachii*, which, above and at the left, seems to have communicated with the *sinus cavernosus.* Deep and wide articular surfaces for the under jaw, very large *laminæ externæ* on the alar processes, especially on the left. At the left a very large *foramen ovale.*

From the front the middle of the head appears high and broad, the face delicate, short, and broad. The orbits rather high and oval, widening somewhat as well to the inner and upper, as to the outer and lower aspect, yet almost four-cornered ; index 82·9, therefore mesokonch. Remarkably wide *fissura spheno maxillaris.* The nose narrow above as well

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as below, the bridge very prominent, bent in at the middle, almost aquiline ; index 46, therefore leptorrhine. The *sutura naso frontalis* fits convexly above into the nasal process of the frontal bone. *Spina anterior* and *inferior* well developed and prominent ; *crista* and *septum* very thick. On the cheek-bone either side a short indication of a posterior fissure, which, however, lies very high ; on both sides three small *foramina zygomatica.* Canine *fossæ* are little depressed, but, on the other hand, run from the immensely broad *foramen infraorbitale* on either side to the alveolar process, which is more strongly developed on the left, making a very deep fissure. The alveolar process is entirely toothless, but there are still single open *alveoli*, especially at the left in the region of the bicuspids and first molars ; most of the *alveoli*, especially those of the incisors, are entirely obliterated, and the process has disappeared, so that the shape of the very much shrunken palate is uncertain. Here also the position of the transverse suture is remarkable, because it is pushed so far to the front as to be at a distance of 14 mm. from the posterior edge. The *spina nasalis posterior* is wholly wanting; a short bifid projection larger on the left than on the right.

Skull No. 3.

A child's skull, perhaps female, with the not yet exchanged milk teeth. The outer upper cutting teeth are still enclosed in their cavities. The *sutura incisora* of the palate very plain. The bicuspids and first molars developed, and very large. The first bicuspids with three fangs, two outer and one inner, the right one, moreover, with an *exosteosis* of enamel. The *alveoli* of the second molars are open very wide, and empty, but the teeth, to be sure, had not yet erupted. The openings of the *alveoli* of the wisdom teeth still lie very deeply, and far back. The *synchondrosis spheno occipitalis* very widely open. To the right, at the *squama occipitalis*, is a *sutura mendosa* 24 mm. long, in the direction of the *sutura transversa ;* at the right only a slight indication of one.

Notwithstanding youth, this skull is larger than the two

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preceding ones; its capacity amounts to 1,250 cub. cm., therefore it is mesohypsicephalic (ratio of length and breadth 76·7, of length and height 77·3): therefore in its form it is wholly irregular.

Looked at from above it appears cut off short behind and somewhat unsymmetrical; broadly arched in the region of the parietal eminences, towards the front lessened, but still more broad. It is scarcely phænozygomatic. The sutures are open, but the lower parts of the coronal and the posterior division of the sagittal are very simple. The left *foramen parietale* is obliterated up to an almost invisible point, the right distinct, but moved very near to the suture. The lambdoidal has deep indentations with wormian bone near the angle, and in the vicinity of the side fontanelle. Parietal and frontal emissaries broadly prominent.

At a side view the skull has a wholly female form; the low brow passes with a sudden turning into the long slight parietal curve, from which, posteriorly, there is a very sudden fall, with slight arching of the *squama superioris.* Yet the skull appears high. In the right temporal region is a very large *epiptericum*, 25 mm. long, 10 mm. high, obliquely quadrangular. This completely interrupts the union of the *ala* with the *angulus parietalis*, at the expense of which it is principally developed. The ring is depressed, and in its middle part shows stenokrotaphy. To compensate, the temporal part of the frontal bone is arched forward, bomb-shaped on the left. The conditions are almost normal; but here also is an arching of the orbital portion of the frontal bone, and the *ala* is set more deeply into the latter:—

	Right.		Left.
Breadth of the *ala* above ...	13 mm.	...	20 mm.
Do. in the middle	10 mm	...	12 mm.

At a back view the skull is very high and broad, the sides straight, slightly converging below, the roof slightly rounded. The back part of the head high, the *squama superioris* arched out, almost like a ball. No protuberance, *linæ semicirculares* scarcely visible. Cerebellar archings well developed over

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the *sutura mendosa*, a deep transverse impression (einschnürung ?) which in a manner cuts off the ball-shaped *squama superioris*, and is deepest at the lambdoidal suture.

A view of the skull from below gives the impression of breadth, principally in the mastoid region, whilst the laterally narrowed and very small occipital part seems rather long. The mastoid processes small, with a deep fissure. *Foramen magnum* very large, especially long and posteriorly—in the middle of the border having a secondary curving out (indication of *spina bifida occipitalis ?*) ; on either side in front of this a thickened place forming a smooth articulating surface, evidently for the reception of the ring of the *atlas*. Length of the *foramen* (with the curving out) 36, breadth 25.

From a front view is seen a low, broad forehead, with very distinct eminencies and large nasal process. At the lower part of the latter a short remnant of the frontal suture. The orbits high and large diagonally, widened above and outwardly ; index 83·3, therefore mesokonch. The root of the nose broad and somewhat flattened, the bridge slightly arched and short, bent forward and downward at the end ; the *sutura naso frontalis* flat, and only slightly projecting above the plane of the *sutura maxillo frontalis*. The aperture high and triangular, with rounded corners ; nose index 55·5, therefore platyrrhine. Alveolar process not at all prognathous, but the teeth somewhat obliquely directed forward. Palate short and broad, almost the shape of a horse-shoe, with a large (17 mm. long, from front to back) palatal plate ; index 86·8, therefore brachystaphyline. The curve of the teeth short and wide, diverging behind.

From this description it is manifest that the last of the three skulls differs in the chief respects from the two others, and it is easy to understand that this difference would have become very much greater if the child had lived and completed its development. It will appear later that in these main points it approaches the skulls of the Tamils, although these, among themselves, present no small differences. I

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will not go quite so far as to declare outright that it is a Tamil skull, but it may have belonged to a bastard, and the fact (already mentioned) that the skull No. 316, from Mr. Davis's collection, which is distinctly marked as that of a hybrid of Malabar and Siṇhalese, corresponds with this one almost entirely in the indices (ratio of length and breadth 77, of length and height 78), speaks strongly in favour of the assumption. It would seem at least wiser for the present to exclude it from the collection. But I may at the same time add that the same reasons may be urged against the admission of the skull No. 980, from Mr. Davis. This has a ratio of length and breadth 76, and an index of height 84, although it belonged to a senile individual, with total disappearance of the alveolar processes. If then we withdraw this, as well as my skull No. 3, there remains tolerably homogeneous material, which offers great probability that it fairly corresponds to the typical conditions. To the support of this view the fact is of value, that the drawings which Davy, and even those which Sandifort has given, coincide not only with those I have furnished (Table II.), but also, in the main, with all the other descriptions and measurements. Nevertheless I am sorry to say that the existing material is nowise sufficient to enable us to decide all the questions. The absence of the lower jaw in all my skulls is a very serious loss, and the senile condition, as well as the extensive *synosteosis* of one of the two apparently pure skulls (No. 2), makes even the use of this, in regard to all the points in which it varies, questionable. Even the third still remaining skull (No. 1) is not free from great and plainly individual aberrations, for it not only shows, in spite of the youth of its owner, very numerous obliterations, but also on either side a large *processus frontalis squamæ temporalis.*

This discussion is in the highest degree instructive, as showing how unsafe it is to make race definitions on the ground of single, or of a few skulls, and how necessary it is, especially for such complicated ethnological conditions as

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those of Ceylon, to have ample and historically sure material at our disposal. In the present case, I consider myself justified in not foregoing the use of the skulls sent to me, because through the comparison with the skull measurements from other collections I have sufficient material under control afforded me. Setting aside the not measured but simply represented skulls in Davy's work, and also those of Mr. Welcker (five) mentioned without any detailed statements, and Sandifort's skulls given with a wholly different method of measurement, we can use for our comparison twelve Siŋhalese skulls, viz., one from the Vrolik Museum, nine from Mr. Davis's collection, and two from mine. These would make a good broad basis for the decision, if important numbers were not lacking in Mr. Davis's: for instance, measures of the orbits, of the nose, and of the palate. Hence my work in several respects can only serve as preparatory.

Our study of details thus far has proved, first, that the Siŋhalese skull is considerably larger on the average than the Vẹddá skull. Leaving out the two doubtful ones from nine skulls of Mr. Davis's, and two of mine, we obtain an average of 1,406 cub. cm., which exceeds the measure of the Vẹddá average by 145 cub. cm. To be sure, the fluctuations here also are very great: the extremes of 1,110 and 1,694 cub. cm. afford a difference of 584, almost as great as we meet with among the Vẹddás. A comparison of them, however, immediately shows that the numbers much more frequently range high among the Siŋhalese:—

cub. cm.		Vẹddás.			Siŋhalese.	
901–1,000	...	1	15	...	—	4
1,001–1,100	...	1		...	—	
1,101–1,200	...	3		...	3	
1,201–1,300	...	10		...	1	
1,301–1,400	...	2	5	...	2	7
1,401–1,500	...	2		...	2	
Over 1,600	...	3		...	3	

Corresponding to the greater capacity, the measurements are also larger with the Siŋhalese.

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And first, for the extent horizontally I have, in like manner, as with the Vẹddás, after putting the figures of Mr. Davis into metre measure (leaving out here also the skull No. 980), received as an average of—

4 Male skulls	...	...	532 mm.
5 Female skulls	...	...	494 mm.
9 Siŋhalese skulls	...	...	511 mm.

Compared with the Vẹddá skulls of Mr. Davis, the difference in favour of the Siŋhalese amounts to 26·11 and 23 mm. My two Siŋhalese skulls, whose small capacity is clear from the previously given numbers, show only 482 and 493 mm. extent horizontally: consequently, in the one case it is somewhat less and in the other somewhat more than the average of the Colombo skulls which I measured. On the other hand, the size vertically (398 and 293 mm.) proved greater with my Siŋhalese than the average of the Colombo skulls (298 mm.). One of the latter, however (No. 5), has a higher measure (300 mm.). In the average, the vertical compass of my two Siŋhalese skulls is 192 mm. less than the horizontal, of which it is 60·5 per cent.; therefore somewhat more than with the Vẹddás.

I have likewise calculated the length of circumference of Mr. Davis's skulls, taken with the sagittal suture. I receive an average from—

4 Male skulls	...	...	393 mm.
5 Female skulls	...	...	370 mm.
9 Siŋhalese skulls	...	...	380 mm.

whilst my own measurements amount to 354 and 365 mm. The corresponding average with the Vẹddá skulls amounts to 366 (Davis) and 355 (Virchow) mm.

As regards the single segments of the sagittal arch, I find the following average from Mr. Davis's figures :—

	Frontal.	Parietal Segment.	Occipital.
4 Male skulls	... 136 mm.	... 136 mm.	... 120 mm.
5 Female skulls	... 128 mm.	... 131 mm.	... 110 mm.
9 Siŋhalese skulls	... 132 mm.	... 133 mm.	... 115 mm.

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or, according to the per centage of the whole sagittal arch :—

4 Male skulls ...	34·6 ...	34·6 ...	30·5
5 Female skulls...	34·5 ...	35·2 ...	29·7
9 Siṇhalese skulls	34·7 ...	35·0 ...	30·2

Here, as contrasted with the Vęddás, we notice in a very striking way the important part taken by the frontal and parietal bones, especially the first, and the insignificant part, on the contrary, assigned to the occipital bone.

With my two skulls the proportions for the middle of head appear most favourable, and therefore rather according to the female type of Mr. Davis's skulls :—

No. 1 ...	33·6 ...	35·3 ...	31·0
No. 2 ...	33·9 ...	35·6 ...	30·4

The proportion of the sagittal vertical extent to the horizontal amounts in Mr. Davis's skulls to 74·3, in mine to 73·7 : hence almost the same numbers as with the Vęddás.

As regards the form of the head, I have already given the particulars of Mr. Davis's skulls. The ratio of the average of length and breadth is, according to index, the following :—

	Skulls.	
Dusseau	1 ...	72·2
Davis	9 ...	72 0
Virchow	2 ...	70·7
On the whole, from ...	12 ...	71·8

This excellent dolichocephalous measure accords almost exactly with the Vęddá average (71·6). Even if we take into consideration the five skulls measured by Mr. Welcker, and omit the one mentioned by Mr. Dusseau, the average for sixteen skulls only amounts to 72·2. I will not lay any particular stress upon the difference in sex, since even with the Vęddás contradictory numbers have been shown. I can only say authoritatively that Mr. Davis's figures for the female Siṇhalese heads show a smaller proportion (71·2) than those of the men (73). But here I must say that the previously described skull (No. 982), which Mr. Davis, for some reason

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not apparent, calls mikrocephalic, has only an index of 65. Omitting this one we get from Mr. Davis's four female Siŋhalese skulls an average index of 72·7.

It is especially noteworthy that all the particularised Siŋhalese skulls (with the exception of skull No. 980 belonging to Mr. Davis, several times mentioned, but left out of the computation) vary within the limits of dolichocephaly, whilst among twenty Vẹddá skulls (even after the exclusion of the deformed one) there were found four mesocephalic. Were we perfectly sure of the correctness of the preceding statements, we must infer from them certainly a special similarity of the Vẹddá race to the Siŋhalese.

As regards the proportions of the single parts of the skull to the length of the whole, I have made a like calculation to that of the Vẹddás :—

		No. 1.		No. 2.
Index (*a*)	...	29·7	...	29·8
Index (*b*)	...	55·6	...	53·5

On the whole, these measures also are somewhat greater than with the Vẹddás, while yet nowise in a constant or characteristic way.

The absolute figures for the greatest length and breadth of the skulls on the whole run higher for the Siŋhalese than for the Vẹddás. I will next give a list of the length, breadth, and height measures of all the Siŋhalese skulls :—

			Length. mm.		Breadth. mm.		Height. mm.
Dusseau ...		...	180	...	130	...	135
Davis,	No. 315	...	172·7	...	124·5	...	121·9
	„ 979	...	177·8	...	132·1	...	139·7
	„ 981	...	175·2	...	132·1	...	129·5
	„ 982	...	182·8	...	119·4	..	132·1
	„ 983	...	180·3	...	129·5	...	144·8
	„ 984	...	193	...	144·8	...	147·3
	„ 1,007	...	195·6	...	142·2	...	134·6
	„ 1,008	...	198·1	...	144·8	...	147·3
	„ 1,009	...	182·8	...	132·1	...	139·7
Virchow, No.	1	...	178	...	127	...	129
	„ 2	...	181	...	127	...	132·5

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We see from these that the greatest length of three male skulls is over 190 mm., and of only four skulls (chiefly female) less than 180 mm. Of the twelve skulls, seven have a length of over 180 mm. The Siṇhalese skulls, according to this, exceed the Vẹddá skulls in length. The result is the same with the greatest breadth. Of the twelve skulls half show a breadth of over 130 mm., three are over even 140 mm. in breadth, only five are under 130 mm.

As regards the vertical height, it is the same with the Siṇhalese as with the Vẹddás, and greater on the whole than the greatest breadth. Only with three (two female and one male) does the breadth exceed the height. On the other hand, in two skulls of women the height is considerably greater than the breadth, viz., about 12·7 and 15·3 mm. In three cases the height reaches a measure over 140, rising in one to 144·8 and in two to 147·3 mm. This is considerably more than with the Vẹddás. Nevertheless, the ratio of length to height reckons for :—

	Index.	Males.	Females.
Dusseau ...	(1) ...	75·0 ...	—
Davis ...	(4) ...	74·0 ...	(5) 74·8
Virchow ...	(2) ...	72·8 ...	—
Total ...	(7) ...	73·8 ...	(5) 74·8
Average of the whole twelve		...	74·2

The result, therefore, is a little below the average of the Vẹddás (74·9), and within that of orthocephaly. The figures given by Mr. Welcker (77·2) exceed considerably the above estimate; but if we include them in taking the average, and leave out the estimates of Dusseau, the result obtained for sixteen skulls is 75·1, which is only a minimum over the amount of the Vẹddá index.

The auricular index is likewise less than with the Vẹddás (63·5 and 58·5)—in the latter case less than with any of the Vẹddás.

The total result as regards the formation of the skull is, hence, *that a great correspondence exists between the proportions of the Siṇhalese and the Vẹddás, while the absolute*

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figures show the Siṇhalese to exceed the Vẹddás, as a rule, in height. These differences would in the average be of still more importance if the two skulls I have measured had not suffered from a great variety of impediments to their perfect development. I therefore call attention to the description, and will here only say that there is certainly premature *synosteoses* and much irregularity in the temporal region, especially in the one case, where there is stenokrotaphy, and where the squamous portion of the temporal bone overlaps the frontal bone; and in the other case owing to a great *epiptericum.*

In the latter condition was also found the Vẹddá skull from the Colombo Museum; and a Vẹddá skull from the London Museum shows (as before mentioned) stenokrotaphy.

In examining the form of the face, I follow the same method as before with the Vẹddás, and begin with the orbits.

Unfortunately, a great difference appears in the orbital index of the two skulls I measured, which it is difficult to reconcile, the first being 76·9 the other 82·9—consequently, one chamækonch the other mesokonch. The last will therefore correspond nearer to the Vẹddá skulls. Here I must suspend judgment, for no other observer has recorded orbital measurements of the Siṇhalese, or made any statements about the shape of the orbits. Whether the shape which I have spoken of as inclining to quadrangular is of any significance, must be decided by further observations.

It is the same with the nose index. In the first of my Siṇhalese 57·7, therefore platyrrhine; with the second 46, therefore leptorrhine. Like differences are found, to be sure, in the Vẹddá skulls, whose average shows a mesorrhine measure (52·2), while we might have expected, according to the descriptions of the observers before quoted, a greater uniformity in the shape of the nose. The bony structure of the nose in the Siṇhalese skulls is narrow, prominent, and with a slightly aquiline bridge; and I have the impression that the form, as it exists in skull No. 2, is really the typical

one. I have earlier expressed my idea* about a form which is determined by two wholly different factors, not necessarily united to one another, viz., the height of the nose and the breadth of the aperture. But it is not worth while to continue this discussion at present, with so little material.

Only six of Mr. B. Davis's skulls offer material for determining the index of the face, and of these five are female. I have computed them as follows :—

Skulls.	Height of whole Face. mm.	Transverse Diameter. mm.	Index.
No. 315 ♀	109	114	95·6
„ 979 ♀	91	117	17·7
„ 981 ♀	104	117	88·8
„ 982 ♀	102	125	81·6
„ 983 ♀	117	127	92·1
„ 1,007 ♂	130	132	98·4

Here a very considerable contrast appears to the Vẹddás. Whilst the highest measure of the male Vẹddá was 88·2, with the Siṉhalese we have a male skull of 98·4 and two female skulls of 92·1 and 95·6 ; a third female skull has an index of 88·8. There remain only two female skulls with low measures, one 81·6 and one of a weak-minded person, which is 77·7. Whilst the total average with the Vẹddás was only something over 83, I find for the Siṉhalese 89.

If we now reflect that of the female skulls, as a rule, the measure is lower, and that here, of six skulls, five are female, among which is included the abnormally low measurement of the skull of a weak-minded person, we may assume as very probable that the Siṉhalese face index in the classification suggested by Mr. Kollmann (which, however is based upon a somewhat different computation) is leptoprosopic. The smallness of the yugal distance is decidedly in favour of such an assumption.

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* Virchow. Beiträge zür physischen Anthropologie der Deütschen mit besonderer Berüchsichtigüng der Friesen. Abhandlungen der Akademie. B erlin, 1876, s. 143, 350.

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Since in both my skulls the lower jaw is wanting, I cannot arrange a corresponding calculation. Added to this, one of them is so greatly changed on the edge of the jaw by age, that it could not even be used for the middle face index. I can therefore simply institute a comparison between one Veddá skull (No. 1) and one Sinhalese. In the following I give an index (*a*) calculated from the proportion of the height of the middle face (root of the nose to the alveolar edge) to the zygomatic diameter, the latter = 100; and a second (*b*) calculated from the same height, and from the molar breadth (lower end of the *sutura zygomatico maxillares*), the last = 100:—

		(*a*)		(*b*)
Veddá	...	50·0	...	70·1
Sinhalese	...	52·6	...	60·5

Here the result is, as before, less breadth of the whole face with the Sinhalese, but greater width of front face. The alveolar index of the Sinhalese No. 1 shows a comparatively high figure, viz., 99, but the facial angle (external meatus, nasal spine, root of the nose) only 75, whilst in the case of the Veddás amounting to 82.

With regard to the palate, I have unfortunately neglected to take the measure of it in the Veddá skull. I have, however, stated that it was broad, and the alveolar ridge in the shape of a horse-shoe. Contrasted with this, the Sinhalese palate exhibits considerable difference. According to Dusseau's figures, I reckon a palatal index of 73·7; according to mine, for skull No. 1, of 75·4. Result, a leptostaphyline measure. If we compare the two skulls upon Tables I. and II., below fig. 5, the difference is obvious. Whether it is to be regarded as universal I am not able to say.

On the whole, the osteological investigation of the Sinhalese face, therefore, confirms what has already become conspicuous from the physiognomical observations of individual reporters; *the skeleton face of the Sinhalese differs far more from that of the Veddás than the skull of the former from that of the latter.* It is distinguished, as a whole, in that it is much

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narrower. The same is true of the palate, and probably of the nose. On the other hand, the orbits—at least of my Siŋhalese skull—are by no means high. The greatest uncertainty is regarding the form of the jaw-bone. One Siŋhalese skull I have pictured on Table II. is decidedly more prognathous than the Vęddá skull, Table I., but also more than the Siŋhalese skull, according to Davy. The Vęddá skull of Messrs. Quatrefages and Hamy, as well as the Siŋhalese skull of Sandifort, has, however, a very prominent alveolar process.

Before pursuing this comparison farther it will be expedient to discuss the other races of people who must later on be brought into comparison.

The Tamils or Malabars.

As already explained, we understand by this name the Dravidian immigrants who, in historic time, came from many different points on the peninsula of Hindústán, and in the course of over two thousand years multiplied so greatly that they almost exclusively peopled the north and a large portion of the east of the Island, more especially along the coast. When the Portuguese, the first pioneers of European civilisation, obtained a firm foothold upon the Island, the Malabar rule was firmly established in the old *Rájaraṭa*, or *Pihiṭiraṭa*. Moreover, Valentijn* defines their seat in his time as extending up to the river Corunda Waye, which it seems is identical with the Koorinda, or Kirinde-oya ("cinnamon river"), of Sir E. Tennent,† a little river which toward the south-east, near Mahágan, empties itself into the sea. Davy‡ also designates the northerly and eastern coast provinces as the principal seats of the Malabars.

Pridham§ speaks of them as inhabitants of the land from Batticaloa even to Jaffna in the north, and from there as far

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* Valentijn, *l. c.*, Bl. 49.
† Tennent, *l. c.*, I., p. 41; II., p. 417.
‡ Davy, *l. c.*, p. 108.
§ Pridham, *l. c.*, p. 463.

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south as Puttaḷam. It is not to be understood from this, however, that they live even now wholly separated from the Siṇhalese. On the contrary, they are found in no small numbers mixed with other races, especially in the towns, as the description of Colombo by Sir E. Tennent* very clearly testifies. In this city they form a large fraction of the labouring population. It is of special interest to us that in the east they are immediate neighbours of the Vẹddás.

In fact Wolf,† who found no sort of resemblance between Malabars and Siṇhalese, calls the Vẹddás "another species of Malabar." He describes the Malabars as black, long-haired, and without calves to their legs. Beyond this I find very few statements regarding their physical peculiarities. Most of the writers limit themselves on this point to ascribing to them a stouter physique and greater activity than the Siṇhalese.‡ Mr. Pridham says they either wear the hair carelessly fastened up in a coil upon the crown of the head, or on one side above the ear; sometimes the whole head is shorn with the exception of a single lock upon the crown. Sir E. Tennent§ describes the children of the Tamils as perfectly naked, with glossy black hair and graceful limbs.

To the Tamils, as already stated, belong "the Mookwas, or, as they call themselves, Mukuger." If we may really impute to them a separate origin, as Pridham‖ does, who traces their descent from the Nairs and Mookwas of the Malabar coast, all observers nevertheless agree that from their physical appearance they must be very nearly related to the Tamils, if they are not actually Tamils. The fact that the Mukkávar are Christians, and part of them also Muhammadans, whilst many of the Tamils adhere to the teachings of Brahma, has made the first a special object of attention.

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* Tennent, *l. c.*, II., p. 156.
† Wolf, a. a. O. II., s. 156, 167.
‡ Selkirk, *l. c.*, p. 68. Pridham, *l. c.*, I., p. 465.
§ Tennent, *l. c.*, II., p. 514.
‖ Pridham, *l. c.*, I., p. 466.

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Until of late only a single skull of a Tamil or Malabar was known in Europe. This I found in the collection of Mr. B. Davis. Besides this there was in the same collection the skull of a hybrid of Malabar and Siŋhalese (No. 316). Through the kindness of Mr. Freüdenberg, Consul, I have received three Tamil skulls, unfortunately all without the lower jaw, and with these a child's skull, marked Siŋhalese, which I have already described, and of which I entertain the suspicion that it belongs to the group of Dravidas. Properly speaking, we have accordingly only four specimens, in a broader sense we may say six. The first four are recognisable as male, the two last have so slight sexual characteristics that their distinction is doubtful.

The following is a detailed description of the skulls which are at present in my possession.

Skull No. 1.

A still youthful, apparently male skull, without lower jaw, in which all the teeth are erupted, but so far as they are present (the incisors, the right cuspids, and three bicuspids are wanting) are very little worn off; the *synchondrosis spheno occipitalis* is closed. Capacity small (1,155 cub. cm.), ratio of length to breadth (72) decidedly dolichocephalic, ratio of length to height (79·4) quite as certainly hypsicephalic.

Looked at from above the skull seems somewhat unsymmetrical, especially the left parietal eminence, which is lower and flatter. On the contrary, the left half of the *squama occipitalis* is higher and fuller, the right flattened laterally, the lambdoidal angle very irregular, the right leg falling down abruptly close to the continuation of the sagittal suture; the left, on the contrary, extending almost horizontally. The latter, moreover, contains in its lower part, near the side fontanelle, long *ossa wormiana.* The shape of the skull is decidedly long, mainly owing to the very narrow prominent occipital portion. In front, up to the *tubera parietalia,*

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* Barnard Davis. Thes. Cran., p. 134.

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rather broad, broadest in the region of the latter. Sutures perfect, no trace of *foramina parietalia.* In this region the sagittal suture is rather simple. Strongly marked phænozygy.

At a side view we get the impression of height, and hence also of the shortness. The brow tolerably straight, orbital ridges hardly developed. The upper part of the forehead above the eminences greatly arched, and rising up just in front of the *coronaria.* The descent of the parietal curve toward the occiput is abrupt. High *plana temporalia* intersecting the *tubera squama temp. platt.* Large *alæ,* with very short *anguli parietalis:* at the right 35, at the left 34 cm. broad.

The *norma occipitalis* shows a very high pentangular contour, rather flattened above, horizontal below, with very high and perpendicular sides, only diverging a little below. High and, as mentioned above, very irregular *squama occipitalis,* with somewhat compressed sides, no protuberance ; *lineæ semicirculares* well defined, sharp *crista perpendicularis,* slight cerebellar archings, short *facies muscularis.*

In the *norma basilaris* the skull appears broad, especially in the jugular and mastoid region, whilst the occiput is very narrow and prominent. The *foramen magnum* a long oval, somewhat oblique, 34 mm. in length, 26 in breadth, index 76·4. Articulations prominent toward the front. Mastoid processes thick, but not long on either side, with large secondary eminences on the posterior surface, especially prominent on the left side. The styloid processes well developed, the articular surfaces for the lower jaw very deep. *Hamulus pterygoideus* and end of the *lamina externa* very large.

At a front view the head seems high, forehead full, nasal process very broad. Orbits high, with a diagonal widening below and externally ; index 84·4, hence mesokonch. *Fissura orbitalis inferior* very wide and hollowed out at the end. Nose narrow above and below ; bridge prominent and somewhat rounded ; index 48·8, hence mesorrhine. *Fossa canina* a little depressed on the molar bone on both sides ; a posterior superior fissure, and a large marginal tuberosity. Alveolar

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process strongly prognathous, but only 18 mm. long, with very large *alveoli*. Palate deep and broad behind, with slightly horse-shoe shape. Alveolar ridge 90, therefore brachystaphyline. Horizontal plate of the palate bone more prominent anteriorly in the middle; short *spina nasalis posterior*.

Skull No. 2.

A senile male skull without lower jaw, of small, but yet, beside the others, of relatively larger capacity (1,260 cub. cm.), still dolichocephalic (74·8), and of moderate height (length to height index 73·7); very marked places of attachment for the muscles. Occipital protuberance large, almost hook-shaped. The nasal prominence of the frontal bone broad, protruding greatly, and with jagged traces of the lower part of the frontal suture. The right malar bone, with the contiguous part of the upper *maxilla* and zygomatic arch wanting; right side of the skull slightly eroded by decay.

In the *norma verticalis* the skull seems a pretty regular and broad oval, with its greatest extent in the region of the parietal eminences, and slightly phænozygmatic. The middle part of the sagittal suture rather simple, the left *foramen* wanting, the right lying very near to the suture. The lower side divisions of the coronal and of the *sutara spheno frontalis* obliterated; beginning of *synosteosis* of the *spheno frontalis*.

In the *norma temporalis* we see very high planes, which reach above the *tubera* and up to the lambdoidal suture, ending posteriorly on the left in a thick sclerotic surface whose edge overlies the lambdoidal suture; *ala* broad and indistinct on the right, 26 mm. broad on the left.

In the *norma occipitalis* the section is seemingly nearly pentangular, broad, moderately high, with a somewhat flattened roof. The *squama* are large, especially broad; the lambdoidal angle about 160 degrees. The protuberance well developed, as also the *linea semicircularis superior;* in place of the *linea suprema*, however, a flat ridge. *Facies muscularis* strongly marked; cerebellar archings only slightly developed, middle

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portions rather depressed, near the *crista perpendicularis* two *foramina.*

In the *norma basilaris* the breadth of the middle and posterior regions very evident. *Foramen magnum* very large, long, and somewhat oblique, 38 mm. in length, 28 in breadth, index 73·6. Articulating surfaces very prominent; behind them, on either side, a thickened portion of the edge, especially on the left, which corresponds to an articulating surface on the arch of the atlas. Mastoid processes large and long, with a very deep fissure; very large styloid processes; enormously developed *lamina externa pterygoidea,* larger but thinner Hamular process; to the right quite a long *foramen civinini;* deep glenoid cavities.

In the *norma frontalis* head appears moderately high; face, however, rather short. Large frontal sinuses; nasal eminence prominent, with broad jagged remains of the frontal suture. Orbits high and wide, principally hollowed out diagonally below and externally; index 83·3, mesokonch. Malar bone small; nose above quite small, with sharp and only slightly bent bridge; index 51·1, on the borders of mesorrhine. *Sutura naso frontalis* rather strongly inclining upward, and articulating with the very moderately broad nasal process of the frontal bone. *Fossa canina* full; *foramen infraorbitale* small and flat; alveolar process strongly prognathous: side parts obliterated, only the middle and front still remaining and prominent; palate atrophied.

Skull No. 3.

A still youthful male skull, without lower jaw. All the teeth were fully formed, but the incisors, cuspids, and bicuspids have fallen out; first molars very large, and the crowns greatly worn; only the wisdom teeth without traces of wear, and small; dark betel-colouring of all the teeth. *Sutura spheno occipitalis* closed. Muscular attachments strong, although the bones on the whole delicate. Capacity small, 1,200 cub. cm. Form hypsimesocephalic, although bordering upon

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dolichocephaly; index of length to breadth 75·3, to height 80·9, strongly prognathous.

Top view: short, especially posteriorly; moderately broad; phænozygmatic; sutures open; sagittal suture in the region of the *foramina* wanting.

Side view: short and high; greatest height behind the line of the ear and two fingers' breadth behind the coronal suture. High, straight forehead, strongly incurvated, with large orbital ridges, deep *glabella*, and well-marked eminences; posterior part long and rising; coronal suture pressed far back. Middle of the head short, and much arched. From the crown a sudden descent, with short arching. High *plana temporalia* reaching to the lambdoidal suture, and here forming a large prominence; *squama temporalis* very flat; on the right steno-krotaphy, with *epiptericum spheno frontalis*. The *angulus parietalis* entirely wanting, the *portio orbitalis ossis frontis* in compensation, slightly arched forward. The *ala* is almost wholly prevented from articulating with the parietal bone: it only touches it at its posterior end, under which the *epipterîcum* is pushed. Coronal and spheno temporal sutures run almost in a direct line. *Spheno frontalis* long, in a line with the *squamosa*, which is posteriorly lancet-shaped, 11 mm. long, 5 high; *epipterîcum* articulating with the *ala*. *Ala* itself strongly incurvated in the middle, yet broad; on the left the *spheno parietalis* short, the angle little developed, so that the *squamosa* and the *spheno parietalis* and *spheno frontalis* run almost in a line; *ala* flat and broad.

		Right.		Left.
Spheno parietalis	...	1 mm.	...	7 mm.
Spheno frontalis	...	23 mm.	...	20 mm.
Breadth of the *ala*	...	25 mm.	...	25 mm.

Back view: very high, sagittal region quite prominent, only the suture itself somewhat depressed. The form of an assumed section, about pentangular, but the upper and lateral surfaces slightly arched. Eminences prominent, *squama* high, lambdoidal angle acute, *squama superioris* strongly

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arched, protuberance small. *Facies muscularis* large, and, on the whole, arched; cerebellar archings, instead, slight.

Lower view: short, rounded behind; *foramen magnum* short, 34 mm. long, 29 broad, index 85·2; very strong articulating surfaces, placed rather far to the front and near together. Mastoid processes large; left divided, but has a slighter fissure. Deep and large glenoid cavities.

Front view: high, arching pretty regularly above; well-developed nasal eminence, with somewhat porotic surface; in the middle of it a finely indented remnant of the frontal suture, at either side of it an arching forward, owing to the frontal sinuses. High, somewhat oblique orbits, with rounded roof; index 86·4, hypsikonch. Anterior part of the spheno-maxillary fissure broad. Nose narrow above, bridge almost sharp, somewhat deeply incurvated and arched; aperture broad and high; index platyrrhine. *Spina nasalis anterior* large. *Fossa canina* moderately depressed. *Foramen infra orbitale* flattened. Cheek bones projecting greatly, with rather short posterior superior fissure. Alveolar process short, 14 mm., still strongly prognathous, because of the large *alveoli*. Palate very broad; index 87·1, brachystaphyline. Alveolar ridge slightly converging posteriorly, yet somewhat in the shape of a horse-shoe. Teeth on the whole very large. The anterior part of the palate surface forms an oblique descent. Slight *spina nasalis posterior*; large (14 mm. long) palatine plate.

The single skulls present certain peculiarities which impair their typical value. This is especially true of the first, which shows a considerable degree of plagiocephaly, with great irregularities in the lambdoidal suture. In all probability the obliquity has operated as a pressure, which has affected one side of the occiput, but it is difficult to say whether this pressure has been an artificial one, and if it came first after birth. The extent of the aberration in the configuration of the lambdoidal suture appears to indicate rather a disturbance during fœtal life. We found something

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resembling this in the Siṇhalese skull No. 1, in which the disturbances even extend to the skeleton of the face, and it had better therefore be omitted in the comparison.

The irregular formation of the *processus pterygoides* in the second case, where is found, on the right side, a hyperplasia of the *lamina externa* and a large *foramen civinini*, renders this one also unsatisfactory for an entire comparison. Somewhat more considerable are the temporal deviations in the third case, where at the right is found separating *epiptericum*, and at the left a shortening of the *angulus parietalis*; but we found something similar with the Siṇhalese, for in No. 1 we encountered on either side a frontal continuance of the *squama temporalia*, and in No. 2 a right-sided *epiptericum*. It would indeed be very desirable to have skulls without these individual peculiarities (although possibly somewhat common to the race), but at present they are not to be obtained.

Turning now to the comparison, we find that the average capacity of the skull is very moderate. The skull out of the Davis collection is the largest; its capacity 1,375 cub. cm. Mine have 1,155, 1,160, and 1,200 cub. cm. The average amounts to 1,247 cub. cm., hence somewhat less than the average of the Vẹddás (1,261 cub. cm.), and very much less than that of the Siṇhalese (1,406 cub. cm.). Considering the small number of Tamil skulls, I should not be willing to take this proportion as the standard, but it shows that the low figures of the Vẹddá skulls must not be looked upon as wholly exceptional. The skull of a hybrid in the Davis collection has a somewhat higher measure, viz. (according to Mr. Welcker's tables), 1,325 cub. cm. My doubtful Siṇhalese skull, No. 3, although belonging to a child, is also comparatively roomy, its capacity being 1,250 cub. cm. But these specimens cannot be taken into consideration in computing the average.

The horizontal circumference of the skull out of the Davis collection amounts to 495 mm.; mine measure 477, 490, and 473 mm., giving an average of 483 mm., differing little

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from that of the Veddás and the Siŋhalese, though somewhat smaller than with the latter. The hybrid, No. 316, of Mr. Davis has only 475, not much more than the Siŋhalese (?) child, 472 mm.

The vertical circumference, on the other hand, constantly rises above that of the Veddás as well as the Siŋhalese. It amounts in my three skulls, in the average, to 306 mm., against 289 with the Veddás and 295 with the Siŋhalese. This average is only 174 mm. smaller than that of the horizontal circumference of the corresponding skulls (480 mm.), which is 63·7 per cent., against 59·4 with the Veddás and 60·5 with the Siŋhalese. This difference is very noteworthy. It is found also with the child (Siŋhalese No. 3).

The circumference of the skull from Mr. Davis's collection, taken through the sagittal suture, measures 353 mm.; that of mine 359, 351, and 352; therefore, in the average, 353 mm., against 376 with the Siŋhalese and 363 with the Veddás. Plainly the question here, however, is as to the complementary relation to the vertical measure, for the sagittal circumference in length amounts in the case of the—

Tamils, to	...	...	73·0 per cent.
Siŋhalese, to	...	...	74·3 „
Veddás, to	...	...	74.5 „

of the horizontal circumference.

In an investigation as to the share of the individual portions of the roof of the skull to its whole circumference *(scheitelbogen)*, the striking anomaly is directly presented of the plagiocephalic skull (No. 1 in my collection), which is remarkable for the great development of the middle and back parts of the skull-roof, owing to which there is a perfectly abnormal shortening of the frontal portion. This will be best understood by a comparison of the figures.

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	Frontal. mm.		Parietal. mm.		Occipital. mm.
Davis, No. 314	129	...	122	...	102
Virchow, No. 1	117	...	132	...	110
Do. No. 2	134	...	120	...	97
Do. No. 3	130	...	122	...	100
Average	127	...	124	...	102
Average (omitting No. 1)...	131	...	121	...	99

Calculated according to the percentage of the whole sagittal arch :—

	Frontal. mm.		Parietal. mm.		Occipital. mm.
Davis, No. 314	36·5	...	34·5	...	28·8
Virchow, No. 1	32·5	...	36·7	...	30·6
Do. No. 2	38·1	...	34·1	...	27·6
Do. No. 3	36·9	...	34·6	...	28·4
Average	36 0	...	34·9	...	28·8
Average (omitting No. 1)...	37 1	...	34·4	...	28·2

It is clear from this that for a precise comparison No. 1 must be left out entirely. The two others, however, previously mentioned, viz., that of the hybrid (No. 316) from the Davis collection and that of the child marked Siṉhalese No. 3 from mine, very decidedly approach the Tamil type. They coincide so exactly with one another that the suspicion of the child's skull being really a Tamil skull, or at least a hybrid, grows upon me strongly. The figures for these are the following :—

	Frontal. mm.		Parietal. mm.		Occipital. mm.
Davis, No. 316	122	...	125	...	104
Virchow, No. 3	121	...	125	...	103
Or per centage :—					
Davis, No. 316	34·7	...	35·6	...	29·6
Virchow, No. 3	34·6	...	35·8	...	29·5

Contrasted with the Tamils proper the brow here recedes somewhat, whilst the occiput and parietal portions are more developed, and owing to this all the Tamil relations are a little changed.

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If, on the other hand, we compare the Tamils with the Veddás and the Siŋhalese, a radical contrast appears, especially as regards the share of the brow and the upper part of the occipital bone in the forming of the skull-roof. Whilst with the Tamils it culminates in the frontal division, with the Siŋhalese, and still more with the Veddás, the occipital is strongly developed. The hybrid, in the stronger parietal development, comes nearer to the Siŋhalese.

Still more striking are the variations in regard to the form of the head. To be sure, my plagiocephalic Tamil skull, No. 1, here takes an exceptional place, because owing to its surprisingly little breadth (126 mm.) it gives a low dolichocephalic index (72). On the other hand, the skull out of the Davis collection has a high mesocephalic index (79), and of my two Tamils, one (No. 2) is at the extreme boundary of dolichocephaly (74·8), the other (No. 3) even beyond this, and at the beginning of mesocephaly (75·3), the average being 76·3, therefore mesocephalic. The two hybrids show the same relations; skull No. 316 of Davis has an index of 76·7, the child's skull in my collection has one of 77. This, contrasted with the excellent dolichocephaly of the Siŋhalese, and, with a few exceptions, of the Veddás also, is a very important result.

The smaller occipital development of the Tamil can be seen from this, that the horizontal length of the occiput in relation to the entire length (*a*) is less; on the other hand, the basilar length in the same relation (*b*) is greater.

	No. 1.		No. 2.		No. 3.
(*a*)	27·4	...	23·4	...	27·0
(*b*)	57·1	...	54·1	...	55·8

The greatest length on an average is small. With Davis it amounts to 173, in my skulls to 175, 179, and 170; hence in no case reaching even the moderate measure of 180 mm. The hybrid from the Davis collection measures only 168 mm., while my child's skull measures 172. The greatest breadth, which is always in the parietal region, is found in a skull of

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Mr. Davis's, 137 mm.; in mine it is 126, 134, and 128; in that of the hybrid 130; in the child's skull 132 mm.; hence in none of them anything considerable. In comparison with these the measures of the vertical height are 137·5,—remarkable: in the same order they are 132—139, 132, 137·5,—132,—and 133. The greatest number here, therefore, is that of the plagiocephalic skull, No. 1, which must be left out of consideration. All the remaining figures are very moderate, even small as contrasted with the Siŋhalese, in fact almost on the borders of the Vẹddá figures. The breadth is greater than the height in two out of the three typical Tamils.

The matter takes another aspect if we consider the figures of comparison. The length to height index amounts with Mr. Davis to 76, with my three skulls to 79·4, 73·7, and 80·9, with the hybrid 78, with the child's skull to 77·3. From this the average of the three typical Tamils is 76·8, which corresponds with the hybrids. This is a decidedly hypsicephalic measure, larger than that of the Vẹddás (74·9) or of the Siŋhalese (74·2). This, then, may be included among the diagnostic points.

The auricular index is also correspondingly high. I found it 66·3, 63·1, and 68·8, and with the child 67·4.

Whilst a comparison of the bony skull of the Vẹddá with that of the Siŋhalese proves great similarity, as compared with the Tamil, on the contrary, a great difference is observed. The skull of the latter is hypsimesocephalic, and even when the measure of the contents shows very slight variations, great differences appear in the circumference measures. How much the latter were to be seen in the sagittal circumference and in the share of the different parts of the roof of the skull, has been previously explained in detail.

If we now turn to the shape of the face, we find that with the Tamils it is quite regular.

The orbital index amounts to 84·4, 83·3, and 86·4, hence in the average 84·7, a high mesokonch measure. The child's

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skull also gives 83·3. Very similar is the index of the Vẹddás, while, on the other hand, that of the Siṇhalese seems to be lower. On the whole the orbits are high, in one case (No. 3) even hypsikonch, the upper edge in most somewhat bent, and the diagonal from within and above downward and outward lengthened.

The nasal index of my three skulls shows 48·8, 51·1, and 53·1, —an average of 51, hence on the extreme verge of mesorrhiny. No. 3 only is platyrrhine. The child's skull alone gives the high platyrrhine measure, 55·5. In so far the Tamil nose probably resembles the Vẹddá nose more than the Siṇhalese. But here also the index gives no distinct idea of the shape of the nose. In its bony parts it is throughout narrow and prominent, although the nasal process of the frontal bone is very broad. The bridge is a little bent in, rather sharp and aquiline. The nose, however, with them all is of little height, which may in the living have rendered it quite different from the Vẹddá nose.

The face measures are scarcely satisfactory. Only the skull in the Davis collection has a lower jaw, and in this the index is 85·7, a mesoprosopic measure. Of my skulls, the senile (No. 2) must be omitted because of its defective alveolar processes; the other two have middle-face indices of 51·6 and 53·4. The relation of the molar breadth to the middle-face height amounts to 68·8 and 62·3. The Tamil face occupies a middle position between the Siṇhalese and the Vẹddá face: it is shorter than the first and longer than the second.

As regards the alveolar index, this amounts to 90, 94·8, and 97·8, therefore in the average 94·2. The degree of prognathy, which is quite clear with the Tamils, is with no more certainty to be ascertained from this than from the (nasal) facial angle. The size, especially of the *alveoli* of the incisors, necessitates a strong projection forward of the alveolar process. But the palate also is decidedly broad; hence we have a palatal index of 90 and of 87·7, a brachystaphyline measure. And herein lies a very striking contrast to the Siṇhalese. The size of the

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palatine plate of the *os palatinum*, on the other hand, shows a certain similarity to theirs.

The Moors, or Moormen.

According to the information which I have already given Arabian colonies were at a very early period established in Ceylon for commercial purposes. Even at the present day a large part of the smaller traffic is in the hands of these people, who are still engaged in maritime intercourse with the Continent. Sir Emerson Tennent* deduces from this the appellation "*Marakkala-minisu*," or "Mariners." There are, however, "Moorish" villages and settlements also upon the Island. About Batticaloa especially, they seem to have introduced, or at least to have here brought to greater perfection, the culture of the palm, in the same way as in the south of Spain.† But in spite of this their number is small, and their effect upon the rest of the population even less highly to be estimated, because of their religion, which necessitates a sharply-defined separation, so that they rarely intermarry with the Siṇhalese or other natives.‡ I would not, however, omit them, since in a very characteristic way they occupy a distinct place under the caste organisation. As mentioned they are "attached" to the *Kshudrawaṇsa*, and among them to the Fisher caste (*Karawé*).

Unfortunately we have scarcely any descriptions of their physical peculiarities. Wolf,§ who certainly seems to include all sorts of people under the name of "Black Turks," says the Moors are black, but have strong limbs, thick calves, and shorn heads. Thunberg || describes them as large of stature, darker than the rest of the islanders, and well clothed. Pridham¶ declares them to be the handsomest race in the Island, after the European, of martial appearance, and almost without exception tall and well formed. Davy says, "In dress,

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* Tennent, I., p. 632.

† *Id.*, II., pp. 456–58.

‡ Pridham, I., p. 479.

§ Wolf, a. a. O., I. S. 169.

|| Thunberg, vol. IV., p. 188, quoted by Philalethes, *l. c.*, p. 244.

¶ Pridham, *l. c.*, I., p. 479.

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appearance, and manners they differ but little from the Siṇhalese."

So far as I can learn there is only one skull of a "Moor" in Europe, and that is in the possession of Mr. Barnard Davis.* This one (No. 317 of his collection) came from Colombo. It is a male skull of 1,495 cub. cm. capacity, therefore tolerably large, with a length and breadth index of 70, length to height index of 71, and a face index of 85·7; it is accordingly orthodolichocephalic and chamæprosopic.

A farther comparison is scarcely desirable, because from a single skull no judgment can be formed as to whether it is really typical of the race.

Malays.

We have earlier discussed the existence of a scattered Malay element. A few statements as to their physical condition have come to us.

Cordiner† describes them, as in contrast to the other races, lighter, more inclining to copper-colour than any other of the Indian races. Selkirk‡ speaks of them as nearly of a copper colour, rather below the middle size, with "flattened foreheads, broad faces, large flat noses, and sharp, fierce revengeful eyes." Pridham§ describes them similarly, and calls them by no means agreeable specimens of humanity. They are active, of a slight yet muscular form.

In the Davis collection there is a Malay skull from Colombo. It is marked male. Its capacity amounts to 1,435 cub. cm.; the length to breadth index is 79, length to height index 76, face index 108. It is therefore hypsimesocephalic and leptoprosopic.

Mutual Relation of Races.

It is conceivable that the question of the origin and relationship of the different tribes existing close to one

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* Davis. Thesaurus Craniorum, p. 134.
† Cordiner, *l. c.*, p. 143.
‡ Selkirk, *l. c.*, p. 74.
§ Pridham *l. c.*, I., p. 483.

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another in Ceylon should very early have interested the visitors to the Island.

In 550 B.C. Cosmas Indicopleustes, who lived under Justinian, states, upon the ground of reports from the Greek traveller Sopater, that the natives of Ceylon belonged to different races: he calls them expressly ἀλλόφυλοι.* Even the Chinese were aware that the north of the Island was inhabited by quite a different race from that of the south; the men in the north (the Tamils) they compare to the Hu (Hoo), a people of Central Asia; in the south (the Siṇhalese) to the Liau (Leaou), a mountain tribe in west China, to whom they ascribed "large ears, long eyes, purple faces, black bodies, moist and strong hands and feet," with a long life of a hundred years and more, adding that the men, as well as the women, wore their hair "long and flowing."†

Evidently these old Chinese reporters found no analogy between the Siṇhalese and the Chinese themselves. Nor have they, so far as I know, left behind any accounts from which to conclude that a Chinese colonisation of the Island had ever taken place. All that is gathered from their reports‡ is confined to information about the mercantile and religious institutions, and to one warlike enterprise of the Chinese; but the reports do not come down further than the fourth century of our era, and the defeat of a king of Ceylon by a Chinese army, which occurred as late as the year 1408. Except the statement that in the year 1266 Chinese soldiers entered the military service of king Parákrama, there is no mention made of any longer stay or actual settlement of the Chinese in Ceylon. Notwithstanding this, the Portuguese writer Ribeyro§ has expressed his opinion that the original population of the Island may have been Chinese. Knox‖ also

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* Tennent, *l. c.*, I., p. 568.

† Cited by Sir E. Tennent (I., p. 611) from Chinese works.

‡ Tennent, *l. c.*, I., p. 607, *et seq.*

§ *Id.*, *l. c.*, I., p. 327, note 2.

‖ Knox, *l. c.*, p. 61.

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heard this story from some Portuguese, but says very decidedly: "But to me nothing is more improbable than this story. Because this people and the Chineses have no agreement nor similitude in their features, nor language, nor diet," and adds: "It is more probable they came from the Malabars, their countrey lying next, tho they do resemble them little or nothing. I know no nation in the world do so exactly resemble the Chingulays as the people of Europe." Here we must remember that he looks upon the Veddás and Siŋhalese as belonging together: "Of these natives there be two sorts, wild and tame."

This certainly ingenuous statement is of great value. The reference to the Malabars is, as we see, purely speculative. In reality Knox denies any resemblance of the Siŋhalese to the Malabars, and finds them much more like the Europeans. This is the first unequivocal testimony to the Aryan origin of the Siŋhalese, which since then has been assumed by so many visitors. Davy* says: "The pure Singalese of the interior are completely Indians in person, language, manners, customs, religion, and government." He leaves it indefinite which division of Indians he has in mind, and his mentioning the religion seems to exclude the Aryan or Brahminic division. Certainly he did not refer to the inhabitants of the peninsula of northern India—the so-called Indo-Chinese.

Philalethes† and Pridham‡ alone among the more recent reporters express their conviction of the Chinese origin of the Siŋhalese; both, however, not from anthropological reasons, but on historical grounds, and the latter with reference to the system of drainage and terrace building of the Siŋhalese, which he traces back to China. The historical grounds are of little importance. With regard to drainage, though the invention of this system may unquestionably be ascribed to

* Davy, *l. c.*, p. 109. † Philalethes, *l. c.*, p. 15, note †.
‡ Pridham, *l. c.*, I., p. 21.

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the Chinese, Sir E. Tennent has proved that "the tank system" in Ceylon is of Tamil origin, and was introduced from Hindústán in the fourth century of our era.

After the previous statements no elaborate proof is needed that neither Siṇhalese nor Vęddás, at least in the form of their skulls, present the slightest indication of any relationship to the Mongols. Such a remarkably dolichocephalous tribe has never yet been found among the Mongols. What truth there is in the old Chinese story of the similarity of the Siṇhalese to the Liau in west China I cannot judge; but it is not even proved that this people is to be regarded as belonging to the Mongols proper. We might rather connect them with the present Låos (on the boundary between China and Siam), whom Gützlaff,* according to their complexion, distinguishes as black and white. According to the opinion of Mr. Schott,† however, the Liau are rather identical with the Ljaos, of whom he states only that they were "south-western aliens," therefore, at any rate, not Chinese. Until we have more precise information about this south-western people, which happily is now in prospect, we cannot draw

* Prichard, *l. c.* Third edition, London, 1884, vol. IV., p. 503.

† Professor Schott communicates to me the following: "The word *Ljao*, of which I thought at first, is the name of a river in the present Mandshooria, after which a Tartar dynasty was named, who for some time ruled over north China. Another *Ljao* (in different dialects *lao*, *lio*, *liu*, formerly even *lot*), which indeed is the one for us to consider, is written very like the former. This signifies, with an added *ja* ('back tooth'), 'prominent teeth,' and is besides, in itself alone, the name for certain south-western outlandish tribes, as I see from the original dictionary, named after the Emperor Kang-hi. The tribe southward from Yun-nan, called by the Europeans *Laos*, is, as far as I know, by the Chinese never called anything but *Lao-tschua*, from *lao*, 'old man,' and *tschua*, 'to beat the drum.' This drum-beating old man is evidently a mere counterfeit of a non-Chinese word, as, for instance, *lang-ja*, 'wolf-teeth,' is the Chinese rendering of *Langka*, that is the Indian name of the Island of Ceylon. Corresponding to the old name for a people or peoples, *Hu*, which designated, in general, the population of central Asia to the north of China, and among these the *Hjün-nu*, or *Hjung-nu*, who have often been confused with the *Huns*, and are certainly in name identical with them, is a word signifying, in its appellative sense, the dew-lap of an ox. Another *Hu*, differently written and distincty national, I cannot trace."

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from this citation any important conclusions regarding the physical constitution of the Siṇhalese. I will not, however, pass over in silence the fact that according to an old tradition already mentioned by Valentyn, the Sihala dynasty, from which Wijayo the conqueror was descended, had their residence in Tenasserim; so that according to this a Siamese origin is ascribed to the Siṇhalese. Since, however, all the more recent investigations agree in this, that the dynasty, as well as the language of the Siṇhalese, is derived from Magadha, the present Behar, that is, from the very midst of the Ganges land, there is no need of our following up the tradition. Besides, it is not the search for the Siṇhalese origin which claims our first interest, but fathoming the derivation of the Vẹddás.

Even in case we consider the Vẹddás to be, as some say, savage Siṇhalese, or the Siṇhalese to be tame Vẹddás, as others say,—thus deducing both from one and the same original stock,—we cannot but begin our investigations with the Vẹddás. A reverse order would be justified only if we assumed that the Vẹddás had sunk back from a condition of higher civilisation to the most absolute savagery, in which condition all travellers have found them for many centuries. The theoretical objection to such an assumption I have pointed out already, and will not bring it up again. But I ask, what signs of an earlier civilisation have actually been found? Have the remains of a higher culture been discovered anywhere upon the Island, which, with any show of probability, might be attributed to the Vẹddás? To my knowledge there is nothing of the kind, not even rubbish-heaps (*kjökkenmöddinger*) such as are found in an excellent state of preservation in the neighbouring Andaman Islands. Not one stone implement, such as even the Australian possesses in manifold forms, has been found. Now it is just conceivable that these gaps may be filled by further researches, especially since the above-mentioned remark of Mr. Hartshorne awakens at least a hope of stone axes. But what will be gained

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even by this? At best the possibility of placing the Veddás on a level with the Andamanese and the Australians, whilst, according to the present facts, they must be placed decidedly lower. A people who do not even possess clay vessels, who have no knowledge of domestic animals beyond the dog, who are unacquainted with the simplest forms of gardening and agriculture, who lack almost every kind of social institution, who are not even counted among the outcasts by their civilised neighbours, cannot possibly ever have had the means which make a higher culture of any kind possible. *The hypothesis of a return to barbarism must hence be definitely given up.*

The ground for such an assumption could only be found in the language. How great the difference of opinion with regard to the place which should be given the Veddá language I have already shown. That it is no Dravidian idiom fundamentally seems to me proved beyond a doubt from the testimony before us. A great number of high authorities, among them some of the first linguists, declare it to be rather a Siṇhalese than an Aryan dialect. But whether the Siṇhalese itself corresponds to one of the other Indo-Aryan languages is again contested. But even if, with the well-informed Childers, we take it for ancient Páli, or rather a primitive sister dialect of the Páli, it will then truly be very difficult for any one to argue from it, and still less from the Sanscrit words intermingled with it, the derivation of the Veddás from the valley of the Ganges.

For centuries they have been surrounded by more highly cultivated people, and even if they, from shyness, have remained hidden in their forests, a certain intercourse with their neighbours has yet been unavoidable. Where the Tamils have continuously pressed on nearer to them, as in the vicinity of Batticaloa, a part of the Veddás have adopted the Tamil language.* But during a very much longer period, and

* Cordiner, *l. c.*, I., p. 91. Bailey, *l. c.*, p. 305, note.

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in the greater number of places, they were in immediate contact with the Siŋhalese, to whose kings they stood in a kind of subjection, and from whose line their own chiefs were appointed. What wonder, therefore, if they adopted more and more Siŋhalese words and forms? The question is only whether, beside these, as I suppose, borrowed words, their language has not preserved some individual elements? To this point the collectors of vocabularies and comparative linguists seem to have given very little attention. And yet the words of doubtful origin, as Mr. Hartshorne has designated them, should be most carefully collected and tested. Thus far we are not even informed positively whether the Veddá language contains any words designating numbers. What use is it for our investigation that Mr. Max Müller declares more than half the Veddá words (that is, of those noted down by travellers) to be corrupt Sanscrit? Where belongs the other half, even if smaller, which perhaps with greater attention might be enlarged? If we cannot class it among the Tamil languages it is very possible that it may prove specific. Nothing hitherto justifies us, it seems to me, in any such one-sided statement as that of Mr. Edward Tylor, who calls the Veddá language, without hesitation, Aryan.

The matter would take a rather different aspect if we might assume that originally the Veddás alone inhabited the whole Island, and that they were not only forced back into the forests by the immigrants, but had intermingled with them. Of the Tamils, who did not immigrate until later, we may say that in the north they have, in fact, supplanted the original population, but that in the east they have not merely mingled with the Veddás, but have accomplished a veritable Tamilisation of the Veddás. This appears, however, unimportant for the essential point. Not so with the Siŋhalese. If we follow the statements of the native analyists, the origin of the Siŋhalese is to be traced back to the followers of king Wijayo, a victorious host of immigrants from the valley of the Ganges. It will not be necessary to

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take the number of seven hundred people from Magadha (Behar), as the annals give it, quite literally, but whatever it was, the proportion must have been something like that of the Danes and the Normans in England. The larger part of the Island was divided into fields and gardens, and a patriarchal system introduced which has lasted for thousands of years. A series of facts testify that the aboriginal population was not wholly excluded from this system; even the circumstance that the Vẹddás were reckoned among the high caste of agriculturists (*Goyiwaṇsé*, or *Vellála*) clearly indicates that an established position was early insured to them in the political organisation of the country. Upon such a foundation the intermingling of the Magadha people with the aborigines would most naturally take place, and if we look upon the Siṇhalese race as the result of this commingling, the experience of so many other countries where a similar intermingling took place would make it perfectly explicable that the Magadha people made their language, the old Páli or Eḷu, the ruling one, while in their physical conformation the aboriginal element won lasting influence.

With such a view of the matter the Vẹddás and Siṇhalese would neither be identical nor distinguished from one another simply by a degree of culture. The Vẹddás would appear rather as representatives of the aboriginal race; the Siṇhalese, on the other hand, as hybrids, produced by a union of immigrant Indians with Vẹddás, and therefore varying according to the measure of the participation of either of these elements. This indeed strikes me as being the solution of the anthropological problem before us, so far, at least, as the material at present reaches. The linguistic difficulty, that also the unmixed natives adopted the Aryan language of the conqueror without, as far as we can judge, having been forced to do so, appears to me no longer insurmountable, since from personal experience I have established the fact that in the Baltic provinces of Russia one part of the Finnish population after the other, through

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imperceptible but steady progress, has become Letticised to such an extent that the Courland language has wholly, the Livonian almost wholly, disappeared, and only the Esthonian still offers any resistance.*

Considered simply on anthropological grounds, the differences between the Veddás and the Siṇhalese are not so great as to oblige us to assume an absolute contrast in the two tribes. I will not deny that the number of skulls we know to be authentic, which I could personally test by comparison, is too small to lead to a definite conclusion; but they seem sufficient to enable us to ascertain whether any reason exists for distinguishing results obtained in other ways. Such reason I do not find. After having with the greatest caution excluded the skulls which were of doubtful origin, as well as those which through peculiar malformation showed great aberrations, there still remains, with the addition of skulls found in foreign collections, so great a number of useful specimens that they much exceed what stands at our disposal relating to other tribes.

Comparing briefly what has been arrived at, the result is first, that the Veddás, as well as the Siṇhalese, are dark tribes, whose complexions vary between yellow-brown and black. The greater number of observers describe the Siṇhalese as not actually very dark, but rather of a chestnut-brown, or brown with a yellow undertone. Percival describes the women as of a yellow colour; Cordiner and Selkirk assert that the insides of the hands and feet are white. The accounts do not attribute to the Veddás such fair skins; the report of Percival that the Veddás are copper-coloured and fairer than the rest of the Siṇhalese is wholly unsupported.

But even allowing that a considerable amount of difference in colour exists between the two tribes, it may at least be taken into consideration that the Veddás are naked, exposed

* Zeitschrift für Ethnologie. Verhandlungen der Berliner Anthropologischen Gesellschaft, 1878.

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to all the inclemencies of the weather, without regular habitations, and, moreover, dirty in the extreme—conditions which, even in our climate and under much less trying circumstances, would be enough to bronze the skin very deeply. The Siṇhalese, on the other hand, are more or less completely clothed, wearing something at least on the lower part of the body, live in regular houses under relatively favourable conditions, and are often distinguished for great cleanliness. If then, as reported by travellers, very dark, almost black individuals are by no means uncommon among them, it is certainly a noteworthy fact.

The character of the hair also is plainly similar, only that here the effect of culture is conspicuous to a much higher degree. Whilst the Vęddás never comb theirs,—perhaps, in general, do not interfere with it in any way,—so that from year to year it becomes more and more dishevelled, and in a bushy matted mass covers head, face, and shoulders, the Siṇhalese exercise a quite unusual womanly care in smoothing and arranging their hair. Both tribes, however, wear the hair long; it is black, luxuriant, and a little wavy; only with the Vęddás, owing to neglect, it hangs down in a tangled but not curly manner; the tresses, properly speaking, notwithstanding, are neither curly nor woolly. We will add that in single cases a more curly kind of hair is seen, as in that of the elder man among the drawings given,* though even in his case the hair is long and wholly different from the little close rolls and woolly hair of the real Negroes and Negritos. Had it early been cleaned and combed it would probably be like that of the Siṇhalese, glossy as ebony. The picture of the young girl in the drawing* seems to exhibit just this improvement.

A very remarkable statement, looking at the matter as it were from the other side, is to be found in d'Albertis.† This traveller had engaged in Point de Galle, two Siṇhalese for

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* No drawings are reproduced.—*Hon. Sec.*

† L. M. d'Albertis. New Guinea. London, 1880, vol. I., p. 259.

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his researches upon New Guinea. When these Siŋhalese had become acquainted with the natives of Yule Island (in the Gulf of Papua, at the south of New Guinea) they told him these people resembled their own country people, only that their complexions were not so dark. When he called their attention to the fact that the hair of these natives was "fuzzy" they replied that the Siŋhalese also would have "fuzzy" hair if it were not daily combed and carefully oiled. M. d'Albertis mentions in connection, that the hair of one of the Siŋhalese, who wore it short, was crisp, and that of the other, who wore it long, was smooth; he also does not deny that many of the natives resembled the type of his Siŋhalese. Even setting aside this analogy, as drawn from only two persons, still this statement, so wholly impartial, pretty conclusively proves that the Siŋhalese hair, when uncared for, strongly resembles that of the Veddás. A marked contrast is, at any rate, implied to the smoothness of hair of the Malays and Mongols; and the ἁπλότριχα of Palladius must not be understood in the sense that the hair of the Veddás is called smooth without any reservation.

Reports with regard to the colour of the iris are less complete, but we gather from the descriptions that, as a rule, it is dark. As to the Siŋhalese, Davy makes more explicit statements, and from these we learn that the eyes are generally black, seldom hazel, rarer still grey, but only among the Albinos light blue or red. To be sure, in the poetic description of an ideal Kandy beauty given, "eyes, the blue sapphire and the petals of the blue manilla flower" are considered desirable, but this can hardly be said to refer to a typical peculiarity. Nowhere is anything of the kind mentioned of the Veddás, and we may therefore assume their iris to be really black or dark brown.

As regards size, plainly both races are of moderate stature, rather short than tall. If the height of the Veddás on the average is 1,537 for the men, and for the women 1,448 mm., with the Siŋhalese, on the other hand about 1,625

to 1,650 (men), the significance of the shorter measure of the Vẹddás cannot be doubted, and much less since we find the minimum measures for the men amounting to only 1,245 mm.

The information about the Siṇhalese is unfortunately very incomplete; in one thing, however, all observers agree, that they are smaller and less vigorous than the Europeans. Whether there is only a relative difference in size between Siṇhalese and Vẹddás, whether the latter were stunted in growth in consequence of their wretched life, or whether their shortness is a typical race peculiarity, is still doubtful; yet the fact that they are not all dwarfs, but that comparatively large Vẹddás are met with (for the very scrupulous Mr. Hartshorne gives the measure of one man as 1,638 mm.), may be adduced in favour of the hypothesis that their often dwarfish size is a result of long-continued unfavourable conditions for development. Nevertheless, the fact in the main is well established that the Vẹddás belong to a small, indeed to one of the smallest known races. If we add that the *Vẹdiraṭa* is extremely rich in game, that the Vẹddás are skilful hunters and fishers, that honey and edible fruits and roots stand in plenty at their command, we cannot say that, like the Australians, they suffer from enforced deprivations. If, notwithstanding, they are much smaller than the Australians, it seems to me we must recognise their smallness of stature as constitutional.

Concerning their development of muscle and strength of body, the witnesses testify loudly in favour of the Vẹddás. Though the fleshy parts are rather slender, perhaps even lean, the Vẹddás seem to possess, in general, great capacity for active effort, and limbs of good proportions. Compared with the Siṇhalese in the lowlands they may be said to show a certain superiority in all work requiring muscle, for it is the Siṇhalese of the mountains only, especially the Kandyans, who are renowned for physical strength. The shortness of the thumbs and pointed elbows, emphasised

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by Mr. Hartshorne, may be explained among the Vẹddás, perhaps, by their shortness and leanness;—at any rate, only the first would be of any importance if it should be proved by measurement to be altogether disproportionate. Perhaps we meet here, however, with a deception similar to that of Mr. Bennett's, who lays such stress upon the length of the foot, whilst direct measurement shows perfectly fair proportions. It may be true that the Vẹddás are flat-footed, but this would not be sufficient to constitute a race-distinction.

Similar observations, only still less distinctive, we find in regard to the size of the head, especially the capacity of the skull. The single numbers, as well as the averages, I have already given, and compared with one another. The result proves that the Vẹddá skulls on the average are much smaller than the Siṇhalese; in fact, that a certain number of them can be called positively nannocephalic. The Siṇhalese skulls, however, have only a capacity on the average of 1,406 cub. cm., and among eleven examples only three between 1,100 and 1,200 cub. cm. If we weigh against this that also among the Vẹddá skulls were two of 1,614 and 1,420 cub. cm., it follows that (supposing these skulls to be genuine) not only is nannocephaly no constant characteristic, but skulls of even great capacity are found among the Vẹddás. The numbers slide over from both sides; the highest average of the Siṇhalese does not prevent the occurrence of very small examples; and *vice versâ*, the certainly very low average of the Vẹddás includes some pretty large specimens.

I will not rehearse the length measurements and the relations deduced from them. In this way certain differences between the two tribes have come to light, but we shall be able to represent them parallel to each other in the indices. To only one of the proportions will I here call attention, because this may be of considerable importance, viz., that with the Siṇhalese the front and middle head have a larger share in forming the roof of the skull, while with the Vẹddás it is the occipital region. Yet I am bound to mention

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that the frontal breadth (lower) of the Vęddá skulls from the Colombo Museum was by no means less than that of my Siŋhalese.

Of special interest is the comparison of the skull indices. The average ratio between length and breadth which I have ascertained is for both tribes almost identical: 71·8 for the Siŋhalese, 71·6 for the Vęddás. This is a highly dolichocephalic measure. If by this is proved that all the Siŋhalese skulls we have for examination are dolichocephalic, and that among twenty-eight Vęddá skulls four were mesocephalic, we might suspect Tamil skulls had been intermingled with the latter. This cannot be decided without new and very sure material. For our present comparison we can only assume that these important relative measures do not point to any radical difference in race between Siŋhalese and Vęddás. With both the skull is long and narrow, yet among the Vęddá skulls there is a greater number in which the narrowness is extreme than among the Siŋhalese.

It is the same with the ratio between length and height. This is orthocephalic with both tribes—with the Vęddás indeed even to the border of hypsicephaly (74·9), with the Siŋhalese somewhat less (74·6). But we must, in both kinds of skulls, calculate from those of medium height. With reference to the height measurements the ratio is somewhat different, in so far as here the larger figures are on the side of the Siŋhalese.

These coincidences of the main indices are so great that they could not be greater within the limits of a single race. The configuration of the capsule of the skull may, aside from the share of the separate bones in it, be considered as identical. In fact, according to the testimony of travellers, the difference of race is more conspicuous in the face than in the skull. It is chiefly in the form of the nose, particularly the flatness of its ridges and the breadth of the nostrils, but likewise to the form of the lips and jaws, which are throughout described as prognathous, the various authors call

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attention, as being characteristic features of the Vẹddá face. Contrasted with the Siṇhalese nose, which the old Chinese reporters call a bird's beak, and in the description of the Kandy beauty is compared to a hawk's bill, contrasted with the delicate lips and orthognathous jaw, which we perceive in Davy's drawings, we find certainly very striking differences.

Osteological investigation has, regarding the main facts, confirmed these observations made among the living. Unfortunately we have not been able to turn the skulls found in Europe to much account in this direction, owing to the difference in the published measurements, and least of all indeed with the Siṇhalese; moreover, it is very unlucky that the two skulls in my possession, of which one has belonged to a young, the other to a very old man, show great individual differences.

In general the skeleton face of the Siṇhalese is narrower and longer than that of the Vẹddás. The former prove to be leptoprosopic (index 89), the latter chamæprosopic (index 83–84). Corresponding to this the palate with the Siṇhalese is more long and narrow, with the Vẹddás rather short and broad, with a prognathous jaw. In this last particular the contrast to the Siṇhalese is not so clear, since Mr. B. Davis has made no reports concerning it, and of my skulls, one is a strikingly prognathous one, although not having a long alveolar process. Moreover, with the Vẹddás occurs mesokonchy (84·6) and mesorrhiny (52), with many individual aberrations, it is true; so that with the women we have more platyrrhine, with the men more leptorrhine forms. On this point the Siṇhalese material is very unsatisfactory and quite inadequate. I will return to this latter, although pretty much all concerning it is conjecture. I add here only the comprehensive judgment of Mr. B. Davis* in respect to the type of the Ceylonese and Indian population.

* Davis. Thesaurus Craniorum, p. 158.

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"In Ceylon and the plains of India we have found the people (Veddahs as well as the more elevated races), as far as our material extends, characterised by small, narrow, long, and rather tall crania, having prominent nasal bones and well-expressed faces when we refer to the typical skulls. As soon as we ascend the southern slope of the Himalayas we meet with races of a very distinct cranial type." Whether this judgment refers to the non-Aryan tribes of India is far from clear; certainly in this generalisation it may remain an open question.

If we now draw into comparison the Tamils or Malabars, we come in contact with a much more widely diffused prejudice, although it has only found expression in recent times. Ribeyro had early the opinion that the Siŋhalese originated in a mingling of Chinese and Malabars (Gallas*). Knox† also, although he found little or no similarity between Malabars and Siŋhalese, on historical grounds considered a relationship possible. The later writers have (chiefly from outward observation) looked upon the Siŋhalese as Aryans, and sought to find a Dravidian origin for the Vęddás. Lassen‡ only, who considers the Vęddás as that portion which had remained unchanged, traces back, on linguistic grounds, the entire "people of the Cingalese" to Dekkan tribes. Sir E. Tennent§ also alludes to the existence of linguistic and religious (if we may use such an expression) affinities which seem to point to the people of the Dekkan; he assumes‖ that the Vęddás have the same relation to the Aryan Siŋhalese as the mountain tribes of India to the later Aryan immigrants. He mentions especially the Koolies in Guzerat, the Bheels in Malwa, the Puttooas in Cuttack, the Khoonds in Gundwana, the Bedas in Mysore, and the wild

* Pridham, *l. c.*, I., p. 21.
† Knox, *l. c.*, p. 61.
‡ Lassen. Indische Alterthumskunde, I., s. 199.
§ Tennent, *l. c.*, I., p. 328.
‖ *Id.*, *l. c.*, II., p. 438.

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hordes in the mountains to the east of Bengal. Mr. Bailey* concurs with this view. He not only brings forward the Khonds, the Puttuwas or Juanguas, the Pulindas (in Orisa), the Meekirs (in north Cachar), &c., but extends his comparisons even to Assam, Tenasserim, and east Burmah. But his proofs also are drawn wholly from the social and religious life of these peoples. Without any special evidence is the statement of Mr. Tagore† that a wandering tribe known to the Ptolemies in the northern part of India, the Vaidehas, and who were later encountered by Tippoo Sahib in Mysore under the name of the Bedas, are still extant in their wild and savage condition in the Vẹddás of Ceylon. Mr. Jagor‡ mentions that the Bedas who live in little groups in the woods of Travancore and Cochin are considered by some to be a branch of the Vẹddás of Ceylon. However interesting these suggestions may be, they still appear to me to assist very little toward the settlement of the disputed question.

Anthropological comparisons have until now hardly been undertaken. Neither have I the intention so far to extend the present investigation, although a variety of material for it is before me. I shall certainly make some references to such, but a full discussion of all the points to be considered would require a much more extensive work. In the first place it will be necessary to take the Tamils of Ceylon into comparison, and chiefly because the historical accounts, going backward as far as Wijayo, inform us of numerous marriages, not merely of the kings, but of their retainers, with the Malabar women, not to mention the very early invasions and settlements made in the Island by Tamil hordes.

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* Bailey, *l. c.*, p. 307.

† Transactions of the Ethnological Society of London. New series, 1863, vol. II., p. 381.

‡ Zeitschrift für Ethnologie, 1879, Bd. XI. Verhandlungen de Berliner Anthropologischen Gesellschaft, s. 167.

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In spite of the meagre reports with regard to the physical charateristics of the Támils we cannot doubt that they, likewise, are very dark, more or less black, and have long black hair. For the rest, observers lay much stress on their great strength and activity, nothing more. Hence there remains to me only the scant craniological material found in the collection of Mr. B. Davis and in my own. This is all insufficient for a final authoritative answer to the question of the ethnological relation of the Tamils to the two other Ceylonese tribes, and hence my conclusion is only to be accepted with great reservation.

All these skulls are comparatively small, and certainly no one would infer from them that they belonged to a powerful race. As already stated, the average capacity of a Tamil skull is 1,247 cub. cm., which is even less than the average of the Vẹddás and of the Siṇhalese. It is scarcely possible to look upon this number as the typical one for the race, in my opinion, and it is only interesting as showing that small skulls may be found among all the tribes of the Island. Still there is none among them which reaches the minimum number of the Vẹddás.

More important, however, is the difference in the form of the head. The Tamil skull, to judge from these specimens, is hypsimesocephalic, in fact wholly different from the Siṇhalese and the Vẹddá skull. Its index of breadth is 76·3, of height 76·8. Corresponding to this its transverse vertical length is greater than its sagittal circumference length. With reference also to the share of the single bones in the formation of the roof of the skull we find a considerable difference; the *squama occipitalis* is much smaller; the frontal bone, however, considerably larger than with the Siṇhalese, and still more emphatically with the Vẹddás. The basilar view shows plainly the extraordinary shortness of the occipital region.

I must say after this, that the skull of the Tamils, so far as recognisable from those we have under consideration, exhibits

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no relationship either with the Vẹddás or with the Siṇhalese. The proportions of the face may briefly be stated in the following formula: mesokonchy, mesorrhiny, mesoprosopy, prognathy, and brachystaphyly.

This positively distinguishes the Tamil face from the Siṇhalese, and brings it nearer to the Vẹddá face. But as I have already said, the almost complete identity of the nasal indices (Tamils 51, Vẹddás 50–52) does not prevent the greatest variety in the formation of the nasal bridge. Owing to the greater narrowness of the nasal bone, as well as to the prominent, slightly bent in, and comparatively sharp nature of the bridge, we perceive a certain resemblance to the Siṇhalese nose. Therefore, should we least of all be justified in representing the flat, and, toward the lower part, broad nose of the Vẹddás as a Tamil inheritance? A comparison of the profiles of the faces at a lateral view in Fig. 3, upon my three skull Tables, will show conspicuously the difference in the formation of the noses.

I might in like manner refer to Fig. 1 about the formation of the orbits, and to Fig. 5 in regard to the formation of the palate. Considering the difficulty, however, of showing these relations with perfect distinctness in a drawing, it seems to me that it will tend materially to facilitate a clear understanding of them if I show the principal lines by themselves, and of their natural size. I aim at the same time to draw attention more particularly to some hitherto rather neglected points, and to put sharply defined questions for later discussion. For, to my great regret, I am not in a position to assume any responsibility as to the ethnological significance of my lines. I can only say that I have chosen from the three series those skulls which, after mature consideration and testing, seem to offer the best guarantee that they, to some extent, positively exhibit the race type.

The wood-cuts,* for which the three skulls represented

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* Not reproduced—*Hon. Sec.*

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in my tables have been used, show the exterior outlines of the noses and orbits. The horizontal line, after which these skulls as well as those on my Tables have been arranged, is the so-called German horizontal line, which is drawn from the lowest point of the inferior edge of the orbit to the highest point of the superior circumference of the outer ear opening. The difference in the form of the entrance to the orbit is in this way quite as perceptible as the difference in the distance of the orbits from each other, and in the position of the edges of the orbital entrance toward the horizontal line.

The measures and indices of the orbits in question are as follows :—

		Breadth.		Height.		Index.
Vęddá	...	39 mm.	...	33 mm.	...	84·6
Siŋhalese	...	39 mm.	...	30 mm.	...	76·9
Tamil	...	37 mm.	...	32 mm.	...	86·4

According to this the Vęddá orbit is mesokonch, the Siŋhalese chamækonch, the Tamil hypsikonch. The difference between the first two rests solely on the lesser height, whilst both differ from the Tamils in their greater breadth.

But with this difference is associated a real divergence in the curvature and sloping off of the edges. The curve is slightest with the Siŋhalese, where the upper and under edges are almost straight, and run parallel to each other, so that as the outer edge also is very slightly convex, a flattened quadrangular face with rounded corners is the result. In the case of the Vęddá, where the orbits themselves are largest, the edges have a tolerably regular curve, so that the shape of the orbital entrance is almost round, only the diagonal from the top and inside to the bottom outside is longer because of the greater expansion about the cheek bones. Finally, with the Tamil, which exceeds the rest in height, the upper edge is but slightly convex, and the widening toward the zygomatic bone more distinct; owing to this the shape of the orbital entrance becomes an oblique oval.

To this dissimilarity is to be added the very different

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formation of the naso-frontal region, as may be seen from the following figures :—

	Vęddá. mm.		Siŋhalese. mm.		Tamil. mm.
Distance of exterior orbital edges (diam. biorbitaire) ...	95	...	93	...	90
Distance of the inner orbital edges (diam. interorbitaire)...	28	...	19	...	17
Inferior breadth of *processus nasalis ossis frontis* ...	23	...	25	...	21
Direct length of *sutura naso frontalis*	9	...	13	...	12

With the Tamil the two orbits stand nearest to each other; the root of the nose is narrow but very prominent; the *sutura naso frontalis* lies deep, taking a straight horizontal course, and the nasal process of the frontal bone, though very protuberant and bearing traces of an extremely jagged frontal suture, is stunted in its transverse development. With the Vęddá it is exactly the reverse, and the distance of the orbits from one another greatest; the nasal process of the frontal bone, in which also a remnant of the *sutura frontalis* persists, is broad and full; the *sutura naso frontalis*, although short, pushes right up into the frontal bone, and is therefore very high, so that the *sutura maxillo frontalis* takes an oblique course on either side; the root of the nose itself is small and depressed. With the Siŋhalese the proportions are again different, but resembling nearer those of the Vęddá; the nasal process of the frontal bone is even more broad and full, the nasal frontal suture more symmetrically curved and bulging out at the top, therefore reaching higher than with the Tamil; the distance of the orbits most considerable, the root of the nose itself broader than with the Vęddá, but the bridge at its starting point more incurvated than with the Tamil.

The form of the aperture of the nose is with the Tamil more like that of the Siŋhalese than that of the Vęddá. The former has a breadth of 25 mm., the latter of 24 mm., that of the Siŋhalese 26 mm. Hence the nose of the Tamil and of the Siŋhalese is platyrrhine, that of the Vęddá mesorrhine; the

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indices are 53·1, 57·7, 50. In spite of this the Vęddá nose at its *epiphysis* is flatter and more depressed, the Siŋhalese and Tamil protuberant, the Tamil in fact more than the Siŋhalese. The impression of greater breadth in the root of the nose with the Siŋhalese is only an illusion, and caused by the retreating of the nasal bone into the plane of the frontal processes of the upper jaw, and hence the whole space between the corners of the eyes is flatter and more even. In reality, not only the root of the nose but the entire bony structure of the nose of the Vęddá is narrower than in that of the other skulls. With regard to this I may once more remark that the nasal indices taken in this way from the relation of the breadth of the aperture to the height of the whole nose, gives no idea of the protuberant parts of the nose. As to the aperture itself, in the case of the Vęddá it corresponds somewhat to the European type—is pear-shaped: with the other two, especially the Siŋhalese, rather triangular.

An exhibition of the Vęddá, Siŋhalese, and Tamil palates may render a further comparison of the linear boundaries possible.*

I begin here also with the figures :—

	Length. mm.	Breadth. mm.	Index.
Vęddá ..	48 ...	36 ...	75·0
Siŋhalese ...	53 ...	40 ...	75·4
Tamil ...	49 ...	43 ...	87·7

Consequently the palates of the Vęddá and of the Siŋhalese are leptostaphyline, those of the Tamil brachystaphyline. The last varies most in form; its great breadth and shortness stand in correct relation to the form of the skull. Next to this, not in the index, but in the shape of the tooth-curve, comes the Vęddá palate, the chief distinctive feature of which is that the tooth-curve towards the back draws partly together, and has very nearly the outline of a horse-shoe. Wholly different from the Tamil, and also somewhat differing

* **Drawings not reproduced—*Hon. Sec.***

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from the Veddá, is the Sinhalese; with the latter the palatal plate is unusually long, and at the same time of considerable breadth, so that it is very large, but the tooth-curve does not form, as with the other two, a more symmetrical curve, but the side parts stretch out in a pretty straight line parallel to one another, whilst the region of the incisors forms a broader, flatter curve, jutting out in front. The relatively large share which the *os palatinum* has in the formation of the palatal plate with the Sinhalese has been already pointed out. It may be further mentioned that the teeth in the Sinhalese are most largely developed, and that especially the first molars have unusually large crowns. In the Tamils the *alveoli* of the cutting and canine teeth are very large, so also the first molar, which by far exceeds the rest in size.

The facts given in respect to three of the most important regions of the skeleton face may suffice to show what great difficulties are encountered in attempting to fathom the degree of affinity existing between these three tribes. If we take, as usual, the indices as guides, we gain for each region another combination. Most closely related are :—

(1) according to the orbital index, the Veddá and the Tamil;

(2) according to the nasal index, the Tamil and the Sinhalese;

(3) according to the palatal index, the Sinhalese and the Veddá.

We must not forget, however, that here only one individual is taken from each tribe, and that the examinations I have cited prove that the individual selected by no means corresponded in every single particular to the average of his tribe. Thus the Tamil is platyrrhine, whilst the Tamil average was found to be mesorrhine. If this average corresponds to the typical tribal conditions, then the Tamil nose stands at least as near to the Veddá nose as to the Sinhalese. And yet, as I have shown at some length, it is distinguished in all other respects as well from the Veddá as from the Sinhalese nose.

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Considering the small number of skulls immediately at my disposal, and the very defective or otherwise doubtful condition of some of them, I was obliged to take my pictures from such of them as gave the best indications of regular development. But I can by no means assert that in all respects they represent typical forms, or that my statements do not admit of great corrections. This the future only can decide, and my work will have fulfilled its aim if it hastens the bringing on of new and better material.

For the present I can only make the single assertion that, so far as we have a distinct view of the physical relations, *as few evidences appear of a real affinity between the Tamils and the Vẹddás as between the Tamils and the Siṇhalese.*

This, however, does not decide the question as to whether there is a Dravidian element either in the Vẹddás or the Siṇhalese. The present Tamils of Ceylon are in nowise typical representatives of all the tribes of Hindústán which are usually embraced in the term "Dravidas." Indeed, we find that in the further pursuit of a study of the latter so many varieties among them have come to light, that it has not yet even been proved with certainty which of the so-called Dravidian tribes are most closely related, and which are to be looked upon as the purest. But we now know that in the course of centuries "Malabars" from different regions on the coast of the peninsula of Hindústán, who made invasions and settlements in Ceylon, came, not alone from the nearer points on the coast, but also from quite northern districts. Before expressing a decided judgment all these tribes must be compared in turn.

It would not be here in place to institute a comparison of this kind, and the material at present is not sufficient. I will limit myself to calling attention to the statements of Mr. Callamand* regarding the Maravars, and the introduction of a single example. Through the mediation of Mr. F. Jagor

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* Revue d' Anthropologie, 1878, sér. II., T. I., p. 607.

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I received from Dr. Burnell three skulls from the lower castes of Tanjore, therefore directly from the region corresponding to the Chóla or Solí of the Siṇhalese annals.

Of these three the one which is distinguished by a large back palatal fissure proves so aberrant in form that it must be excluded as pathological. The other two, however, are very similar, except in the certainly very different form of the palate, as we see in the main indices :—

Index of breadth	...	73·3	...	75·4
Index of height	...	76·1	...	78·2
Orbital index	...	85·3	...	80·4
Nasal index	...	51·0	...	50·0
Palatal index	...	73·0	...	90·0

Strictly speaking, only the height and the indices of the nose agree well, both skulls being hypsicephalic and mesorrhine. On the other hand, we find in all the other indices differences which make it necessary to assign these skulls to other categories, according to the special relations considered. One is dolichocephalic the other mesocephalic. Which is here typical ? One is hypsikonch the other mesokonch, one leptostaphyline the other brachystaphyline. According to which shall we decide ?

To be sure we may say that in such limited comparisons chance figures often acquire a higher importance than belongs to them. The difference of the indices of breadth, for example, is just exactly as great (viz., 2·1) as the difference in the indices of height, and yet we are obliged to classify one skull as dolichocephalic and the other as mesocephalic, because accidentally the border figure between the two classifications is 75, and this is just between the two indices 73·3 and 75·4. On the other hand, the equally great difference in the indices of height does not prevent both skulls being assigned to the same category, viz., the hypsicephalic, since the number 76·1 as well as 78·2 is within the recognised extreme. Which of these figures is more, which less accidental I am unable to decide, and the calculation of an average from the single cases would not aid in the decision.

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Nevertheless, I may say that the Tanjore skulls approach comparatively near the Tamils of Ceylon. In these I found also no small individual differences, and in the index of breadth, in fact, exactly the same, for the latter in the Tamil skulls amounted to 72, 74·8, and 75·3. But for the rest so many analogies present themselves between the two groups that in spite of the aberrant pathological skulls of Tanjore I consider it very probable that the people of Tanjore and the present Tamils of Ceylon are connected together.

But the kingdom of Chóli, or Solí, was even in ancient times a civilised state. Among its near neighbours early appeared the wild mountain tribes of the Nilagiris, remnants of which exist even to this day: as, for instance, the Kurumbas (Curumbars, Kurubas). They were subjugated by the kings of Chóla, and are found at present only in sparse numbers.* For a series of measurements and other investigations regarding these people we have to thank Mr. F. Jagor,† and also for some account of the half-savage Naya-Kurumbas living in the forests. Of the latter, Mr. Jagor has brought with him a skeleton, which is in the possession of the Berlin Anthropological Society. It belonged to a woman, and is remarkable for its extraordinary smallness and delicacy. It is 1,310 mm. in height, and of the skull we have the following indices:—

Index of breadth	...	...	74·6
Index of height	...	...	74·6
Index of face	...	...	81·8
Index of orbits	...	...	91·1
Index of nose	...	...	63·8
Index of palate	...	...	64·0

It is therefore an orthodolichocephalic chamæprosopic skull. Its capacity amounts to only 960 cub. cm., precisely the same nannocephalic measure which Mr. Flower gave of the smallest Vęddá skull from Hunter's Museum, and which

* James Wilkinson Breeks. An Account of the Primitive Tribes and Monuments of the Nilagiris. London, 1873, p. 55.

† Zeitschrift für Ethnologie, 1879, Bd. XI., s. 54 *et. seq.*

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he declares to be altogether the smallest human skull in this collection. In fact, this skeleton challenges comparison with the Vẹddás. The skull measurements show great similarity, whilst the Tamils from Ceylon as well as from Tánjore, especially in the index of height, vary essentially. The form of the face is different from both, as well from the Vẹddás as from the Tamils, but not different enough from the Vẹddás to justify an ethnological separation.

The measurements of Mr. Jagor among the living showed in the main similar proportions, although considerable single deviations appear which it is now impossible to account for. He found the Naya-Kurumbas throughout small in stature, and although among them were some very young individuals, the elder ones, especially the women, proved to have even smaller figures. I put the numbers briefly together :—

		Height of body. mm.		Skull index.
A man of 19 years	...	1,435	...	69·4
A girl of 15 years	...	1,402	...	71·0
A woman of 25 years	...	1,345	...	—
A woman of 45 years	...	1,305	...	82·4
Average of the women	...	1,350	...	—

The result in the case of the few wild Kurumbas is :—

		Height of body. mm.		Skull index.
A man of 18 years	...	1,492	...	72·6
A man of 23 years	...	1,515	...	73·1
A man of 27 years	...	1,529	...	80 2
A man of 30 years	...	1,523	...	69 8
A man of 50 years	...	1,589	...	—
Average of the men	...	1,529	...	—
A woman of 22 years	...	1,470	...	—
A woman of 50 years	...	1,410	...	—
Average of the women	...	1,440	...	—

How far the difference in bodily height is universal we cannot judge. At any rate, the women of both tribes are not

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only smaller, but absolutely small. But the Kurumbas altogether must be called small. Mr. Ross King,* in his description of the aboriginal tribes of the Nilagiris, points out the Kurumbas as especially stunted creatures, "low in stature, they are also ill-made. They are among the most debased types of mankind." The indices of the head are, in both of the columns just given, dolichocephalic, and indeed to a very pronounced degree. The fact that we have in each column a brachycephalic head is perhaps to be ascribed to the difficulty in taking the measures of the living.

I do not enter any further into these investigations. For the present I only wished to show that the physical condition of the Tamils, including even those of the Coromandel coast, is not sufficient to represent perfectly the Dravidian type. Close beside them in the mountains of Hindústán we come upon other Dravidas who, to all appearance, are essentially different. Therefore, if one will search out the connection of the Vęddás, and perhaps of the Siṇhalese themselves, with Dravidian India, it would be advisable to go beyond the inhabitants of the coast and bring the mountain tribes into comparison.

But even here the researches will not end, for according to all probability the present mountain tribes are not the real aborigines of Hindústán. In the tradition, together with the Kurumbas, the Vedars are called the oldest inhabitants of Tondamandalam (Madras); and of them, it seems, it was said: "There were then no forts, only huts; no kings, no religion, no civilisation, no books; men were naked savages; no marriage institutions."† I will lay no weight on the name of the Vedars, which probably likewise signifies "hunters," although the mention of such aborigines is certainly noticeable. Further, in the oldest Indian epic, the Rámáyana, we are told of the fights of Vishṇu with fabulous Asurs, who we must imagine to have been the aborigines of Hindústán

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* Journal of Anthropology. London, 1870–71, p. 46.

† Breeks, *l. c.*, p. 55. Prichard, *l. c.*, IV., p. 182.

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and Ceylon. Ráma himself, who is said to have come from Oude, makes war upon Ráwaṇá, king of Ceylon (Lańká), champion of the Yakkho and Rákshasas worship, and conquers him. Curiously enough a tradition has been preserved among the Hayas (Vayas, Haius) in Nepál that at the time when Ráwaṇá was slain they immigrated from Ceylon to the Dekkan, and later from thence to Samroanghar, and finally reached the mountains, which are their present home.* The Varalis, who inhabit the mountains of Konkan,† tell the same tale of their tribe. All these traditions are of course of no positive value for the diagnosis of the different tribes, but they must warn us not to decide our investigations among the aboriginal races of India and Ceylon simply on the ground of some crude linguistic indications, or the physical characteristics of a few better known tribes. All the same, whether the earliest inhabitants of Ceylon immigrated in boats over the small extent of sea which separates the Island from the mainland, or whether, as has been so often conjectured, and is rendered highly probable by the fauna of Ceylon, the Island was once a part of the continent, and as such inhabited by the same tribes, we cannot avoid the conviction that they stand in a close affinity to the aborigines of India.

Whether these were proto-Dravidian or even pre-Dravidian tribes we cannot with certainty decide at present.

The traditions, however far back they may go, with regard to this give very little light. Mr. Zimmer‡ has lately compiled from the books of the Vedas comprehensive accounts of the condition of the Indian people in past ages, but they hardly afford sufficient foothold to enable us to judge

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* Dalton. Ethnological Description of Bengal, re-published by Oscar Flex. Zeitschrift für Ethnologie, 1874, bd. VI., s.

† Louis Rousselet. Tableau des Races de l'Inde Centrale. Révue d'Anthropologie. Paris, 1873, t. II., p. 69.

‡ Heinrich Zimmer. Altindisches Leben. Die cültür der vedischen Arier. Berlin, 1879, s. 100 *et seq.*

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of the Aryan condition. When the light-skinned Aryans from the Punjáb invaded the land, later called Hindústán, they found it already in the possession of numerous tribes of "dark-skinned" people. In the Vedas these same tribes are designated by the generic name of *Dasyu* or *Dasa*. A greater part of them, in proportion as the conquerors penetrated farther into the valley of the Ganges, were forced back on both sides to the mountains, northward into the Himálaya and southward into the Vindhya; those who remained behind were adopted as Sudras, thus becoming a part of the Aryan organisation. Hence nothing stands in the way of the assumption that the mountaineers in general belong to the aboriginal tribes. But neither does anything compel us to consider all these tribes of the Dasyu as homopholic. Indeed, one has recently begun to separate the Dravidian from the Kolarian* tribes, chiefly on account of language. Should we, in the face of such an important linguistic contrast, assume a physical similarity? In this matter the French anthropologists have advanced most audaciously. M. Rousselet† speaks most positively of an immigration of Thibetan tribes of the yellow race from the east, and another of Turanians from the west, before the Aryan invasion; but he assumes, as anterior to both, a population of Negritos. To the admixture of the latter with yellow tribes he first of all ascribes the origin of the proto-Dravidians, counting among these the Malers, the Konds, perhaps the Gonds, and only when fresh troops of invaders had again mixed with the proto-Dravidians, arose, in his opinion, the Dravidas or Tamils. They brought the snake-worship (Nagas) with them. On the other hand, from the immigration of the Turanians arose in the plains the Jats, in the mountains the Bhils, Minas, and Mhairs. He regards as the last remains of the primitive black population the scattered remnants of a small black people upon the high

* Dalton. Zeitschrift für Ethnologie, a. a. O. S. 252.

† Rousselet, *l. c.*, pp. 55, 279, pl. III.

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plateaus of the Amarkantak, who have become known under the names of Djangals, Puttuas, and Juangas. Curiously enough these are precisely such tribes as Sir E. Tennent and Mr. Bailey had already brought into comparison with the Veddás. But with regard to the Juangas (Dschuangs), Colonel Dalton states that they belong to the Kolarians; that their hair is rough, curly, and of a reddish brown colour, their cheek-bones prominent, faces flat, noses depressed, brows vertical but low. He gives the average height of the men as below 5 ft. and that of the women as about 4 ft. 8 in.* This description contains quite as many Mongolian as Negritian characteristics.

If I have many doubts, therefore, about admitting the distinctions of Mr. Rousselet, especially with regard to the assumption of a veritable Negrito race as the aboriginal race of India, I yet in nowise oppose the idea that the tribes of "black-skins" which the Aryans found established in the valley of the Ganges were mixed. How much Mongolian, Turanian, or Negrito blood flowed in their veins must remain for the present undecided. But it is certainly not improbable that a part only of the Dasyu were Dravidians, and that, even before the proto-Dravidas of Mr. Rousselet, pre-Dravidian tribes inhabited the land. Neither the Mongols nor the Turanians satisfactorily explain the stunted growth of the tribes of "black-skins," to whom even Pliny† alludes as "the pigmies inhabiting the mountains in the country of Prasiæ." All the information we have of them is unfortunately so imperfect as to permit of its being turned to account for every sort of opinion.

The Messrs. de Qutrefages‡ and Hamy have collected

* The young women wear even now nothing but green leaves held together by a girdle. In so far they resemble the Wanni Veddás. But according to Mr. F. Jagor the women of the Korogars, some of the Gond groups, and the Chauchra in Hindústán, likewise wear no covering but leaves.

† Plinius. Nat. Hist., lib. VI., c. 22.

‡ A. de Quatrefages et Ernest T. Hamy. Crania Ethnica, V., p. 189.

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accounts of the Negritos in India, from which they conclude definitely that genuine Negritos are still living in various parts of the country. I cannot esteem the evidence sufficient, although I will not deny that the question is open to discussion. I will give only one example as ground for my misgivings, which is not, however, taken from the Indians, but from genuine Negritos from the neighbourhood.

The so-called Negrito (or Mincopie) race which inhabits the neighbouring provinces to the east, and principally several clusters of islands and parts of Malacca (though they are in fact only scattered members of the tribe), show unquestionably by their dark complexion as well as smallness of frame, and particularly of the head, a striking approach to the Vęddás and Kurumbas. As next to them in point of territory we must mention their near neighbours the "little blacks" who dwell in the Andaman Islands. In truth, Mr. Hartshorne* points to certain analogies between Vęddás and Andamanese. But his proofs refer exclusively to single customs and peculiarities,—for instance, to the use of the bow and arrow, to their inability to count,—but nowhere rest upon physical grounds. It cannot be denied, however, that the Andamanese, through previously cited characteristics, are physically pretty closely related to the Vęddás. In the measurements of Mr. F. Jagor† from the living I calculate the average height of the Andamanese :—

		mm.
17 males at	... ...	1,488
10 females at	... ...	1,416
27 Andamanese at	...	1,462

Among these the minimum is 1,350 with a man 20 years old, and 1,320 mm. with a woman of 24 ; the maximum 1,636 with a man 40 years old, and 1,504 mm. with a woman

* Journal of the Anthropological Institute of Great Britain and Ireland, 1878, vol. VII., p. 468.

† Zeitschrift für Ethnologie, 1876, bd. VII. Verhandl. der Anthropol. Gesellsch., s. 262. Journ. Anthrop. Inst., *l. c.*, p. 437.

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20 years old. These are proportions in part even lower than the measure found for the Veddás, on the whole, however, coming to about the same.

As regards the capacity of the skull, it is on the average very small. I can state that according to measurements of Andamanese skulls, for which I am indebted to the kindness of Messrs. Macnamara and Man, they reach and even exceed the measure of nannocephaly which the Veddás and Kurumbas present. One of my skulls has a capacity of only 940 cub. cm., another shows 970, a third 1,050.

As great as the similarity in these figures is the difference in the form of the skulls. The Andamanese, as well as the Negritos generally, are in reality brachycephalic, and this one circumstance distinguishes them definitely from all the Ceylon races. If we add to this that their hair grows in spiral coils, and is to be classed with the woolly hair of the genuine negro, then every possibility disappears of a union with the Veddás, unless we assume that climatic influences have specially affected the hair. The complexion also presents considerable variation. Since most reporters call it pure black with the Andamanese, the Veddás are generally described as lighter, and even by the very trustworthy Davy as resembling the Siŋhalese.

Even less analogy is found between Veddás and Australians. We may certainly point out that the hair and even the beard is somewhat like that of the Veddás; but one glance at the skull, and still more at the skeleton, of the Australian convinces us that here a great and unmistakable contrast exists. In spite of this Mr. Topinard* has recently emphasised the relationship of the Australians as well to the Veddás as to the Bhíls, Gonds, Khonds, Mundas, Kurumbas, &c. I call attention also in this connection to the sufficient number of reasons to the contrary adduced by his countryman, Mr. Callamand.†

* Paul Topinard. L'Anthropologie. Paris, 1877, p. 521.
† Callamand, *l. c.*, p. 624.

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Very much more complicated is the question whether Malay elements were not infused into the aboriginal population of Ceylon, which from the peculiar rigging of their boats has been concluded, not without substantial grounds. The fact that the Malays have extended their settlements much further, even as far as Madagascar, suggests the idea that they may have established upon Ceylon a kind of midway station. There are, however, no obvious physical indications of such a relationship, and I would therefore enter into no further discussion of this possibility, the less so since the generally assumed connection of the Malays with the ancient inhabitants of India impedes such investigation very greatly. The single recent statement of a physical resemblance between Siṇhalese and Malays, which I find is by an American missionary in China, Mr. Williams,* who observed in the former "a Malay expression of countenance."

From the foregoing discussion we assume as proved :—

(1.) *That manifold resemblances exist between the Vẹddás and the Siṇhalese, and that the origin of the Siṇhalese race from a mixture of Vẹddás and immigrants from India possesses great probability, as well upon historical as also upon anthropological grounds.*

(2.) *That the Vẹddás as well as the Siṇhalese in the main features are distinguished from the Ceylon Tamils, and equally from those of Tanjore (Chóla).*

(3.) *That, on the other hand, among the remnants of the old Dravidian or perhaps pre-Dravidian tribes of Hindústán we find even to-day evidence of analogies with the Vẹddás.*

Have the Vẹddás remained in the condition of the proto-Dravidians, or possibly pre-Dravidians, or have they in their isolation sunk to a lower state ? In other words, are they ethnologically to be turned to account in order to paint anew the picture of this primitive period ?

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* United States Exploring Expedition during the years 1838-42. Vol. IX. Pickering. The Races of Man. Philadelphia, 1848, p. 136.

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In various places I have earlier demonstrated why it is not to be assumed that the Vẹddás have ever passed through a state of higher civilisation. If in spite of the reasons for such a conception, which to me seem conclusive, it may nevertheless be assumed that, owing to unfavourable outward circumstances, they have by degrees retrograded physically, and that their present low intellectual condition is the result of this physical deterioration, we should then be forced to represent them as a pathological tribe. The smallness and delicacy of their bones, above all the tiny size of their skulls, and, as a necessary result, the inferior capacity of their brains, might indeed suggest the hypothesis that they are a kind of cretin or microcephyle. Unquestionably the brain of the Vẹddá must be very small; direct and definite statements of how small we have not, and computation is very uncertain. Herr L. W. von Bischoff* has called attention in detail to the inexactness of the proposed method by which the weight of the brain is computed from the capacity of the skull. We can, however, by this method arrive at an approximate estimate, and I subjoin a few such calculations. The first is according to the method of Mr. Barnard Davis, who for the meininges and the vessels deducts 15 per cent. from the figures for the capacity of the skull, and claims the remainder as being the weight of the brain. The second is according to the direction of Herr von Bischoff, who ascertained that the capacity of the dry skulls was with males 11·9, with females about 8·8 per cent. cub. cm. larger than the weight of the brains expressed in grams. The weight of brain, therefore, would be with the Vẹddás, according to—

Davis's method.		Bischoff's method.
Males, 1,136 grams	... ...	1,177 grams
Females, 1,021 grams	... ...	1,105 grams

These numbers, however inexact they may be, still indicate a very striking contrast to the proportions of the brain

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* Theodor L. W. von Bischoff. Das Hirngewicht des Menschen, München, 1880, v. 66.

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in cultured races; indeed, the figures for the nannocephalic girl are so small that we have every reason to inquire whether these can be physiological relations. If we add to this the apparently very small capacity of the Vęddás for mental development, the almost entire absence of all ideal forms of thought, the inability to count, and still more to calculate, the want of any sense of colour, the question suggests itself whether this is not mikrocephaly in the pathological sense? We can distinctly deny this suggestion. The small Vęddá skull is as little to be considered microcephalic, in the technical sense, as the intellect of the Vęddás is to be likened to the mental condition of microcephyles. The individuality of the Vęddás is psychically fully developed. So far as their needs demand they have matured their capacities, and are able to take care of themselves and their children. They establish families, defend their estates (not very definitely limited to be sure), obtain for themselves, partly by great effort and cunning, the necessary food, and even associate, so far as unavoidable, with neighbours and strangers in a free way and as self-determined men. Enough; they are distinguished in all the main features from actual microcephyles.

Mr. Bailey* testifies expressly that madness and idiocy are rare among the Vęddás, especially the latter. He says it is true they have the notion, that when one curses another madness overtakes the one cursed—a notion which prevails also among the Siŋhalese, who designate cursing as *katawaha* ("bad mouth," or "poison from the lips"). But insanity is nevertheless uncommon among them. This testimony is the more worthy of note since Mr. Bailey suggests the idea that, as the result of intermarriages with blood relations, beside a stunted body, diseases of the brain, idiocy, and epilepsy might be expected. But he finds nothing of the kind, and satisfies himself by imputing to the cause mentioned the lack of numerous descendants and dying out of the race, an

* Bailey, *l. c.*, p. 295.

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explanation which, considering the manifold unfavourable conditions under which the tribe live, may at least in this sweeping sense be open to question.

Real microcephaly in the pathological sense is found among the tribes of India. One of the most noticeable examples we know was communicated to the Berlin Anthropoligal Society by Dr. J. Wilson.* It concerns a sect of Fakírs, who administer the service in the temple of Shadowla, in the Punjáb, and who belong to the Suní Muhammadans; on account of their abnormal heads they were called Chuas or Chuhas ("rat-heads"). Of one of these Mr. Wilson has given us some measurements, which, though not showing exactly how they were taken, at any rate indicate much smaller proportions than are to be found among the Vẹddás. According to him, with one male Chua :—

		mm.
The diagonal circumference of the head (measured before the ears, across occiput) ...	19 inches =	482
The horizontal circumference (across occiput, ears, and frontal cavity)	17 inches =	431
The vertical circumference (right across from one ear opening to the other)	8 inches =	203

If we compare these figures with those of the Vẹddás the difference will instantly be clear. With the Chua the size diagonally amounts to less than the size horizontally of the Vẹddá skull No. 1, although the latter is not measured across the frontal cavities, but above them, and of course without any covering of flesh. Although Dr. Johnston asserts the impotence of these people, the sect has still, since the 16th century, continued to perpetuate itself in both sexes, and at some periods so vigorously that their number in the latter half of the 17th century reached a hundred heads. The temple is secretly visited by women, who, because of their

* Zeitschrift für Ethnologie. 1879. bd. XI. Verhandl. der Anthropol. Gesellsch., s. 237. 1880, bd. XII., Verhand., s. 12.

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sterility, pass a night there, and consecrate their first-born, in advance, to the temple service. In the morning "they find a Chua at their side who is supposed to promote conception and beget Chuas." It will indeed be allowable to make another interpretation, and assume direct agency, wherein less impotent individuals than Dr. Johnston saw are employed; however it may be, this example very well illustrates the distinction between microcephaly and nannocephaly.

It may, therefore, without hesitation, be admitted that the impaired bodily and mental development of the Vẹddás is not owing to a really morbid condition, which as such might be hereditary, but rather to be regarded as a race-peculiarity. This, however, by no means excludes the possibility that favourable outward circumstances, especially better food, might produce a more complete development, and the body become larger and stronger, the skull and brain formation more perfect. In fact such cases appear among the Vẹddás, as is proved by examples previously given. A man of 1,638 mm. in height far exceeds the average, and though the one skull in the Davis collection which has a capacity of 1,614 cub. cm. may be considered as a kind of abnormity, there is still the other out of the collection in the College of Surgeons of 1,420 cub. cm., which (supposing it to be genuine) is a very noteworthy specimen.

It might follow from this that the Siṇhalese are civilised Vẹddás, who simply owe the superiority of their physical development to their better life. The Island of Ceylon had of old the reputation of affording the most favourable conditions for the existence of men, and was celebrated for the longevity of its inhabitants. "In Taprobanem," Palladius* writes, "ubi gens est Macrobiorum, namque eximia coeli temperie...ad ætatem 150 annorum senes durant." Saint

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* Palladius, *l. c.*, p. 3; *cf.* Plinius, Nat. Historia, lib. VI., c. 24. "Vitam homimum centum annis modicam."

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Ambrosius even translates the Greek μακρόβιοι, "Beati." However, climatic and outward circumstances favour the Vẹddás too, and if in their peculiar conditions of life they in some degree approach the Roḍiyas, still, as already mentioned, the latter have nowhere sunk to a physical degradation compared with that of the Vẹddás. But no one will deny that with good care both might attain to an incomparably more complete bodily development.*

In spite of this possibility of a more perfect growth, the Vẹddá race is still in reality, as in ancient days, of small stature—in fact one may even count it among the smallest of the living human tribes, and in a not very strict sense speak of it as a tribe of dwarfs. As a further corroboration of this, such tribes were scattered all over India. I have already referred to the Naya-Kurumbas. But beside these, people of small stature and little heads are not uncommon. Even the Siṇhalese and Tamils of Ceylon have already afforded us examples of this. Herr von Bischoff† speaks of the brain of an Indian from Bukkur of 1,660 mm. in height, which weighed only 973 grams: he quotes at the same time an observation of Peacock's, who found in a native of mixed origin from Bombay a brain of 1,006 grams, whilst Mr. Clapham ascertains the weight of brain of a Bengalese to be 1,531 grams. In the collection of the Berlin Anthropological Society is the skull of a Poleyar, with a capacity of only 1,040 cub. cm.; that of a young native of further India, belonging to the caste of the oil merchants, having a capacity of 1,150, and his mother's of 1,100 cub. cm. Of the skulls from Tanjore which I mentioned one has 1,200 the other 1,255 cub. cm.

The nannocephaly of the Vẹddás, however little pathological it may be, compels us in nowise to go beyond the province of Indian ethnology to seek out analogies. Possibly

* Davy (*l. c.*, p. 107) states that among the Siṇhalese there are more men than women; in the fishing towns, where the food is better, we find, however, as in Europe, that the case is exactly the reverse.

† Von Bischoff, a. a. O. S. 83.

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India in ancient times was inhabited by tribes who bore a close relationship to these. With as little propriety as the present Hindús can be said to have sprung, and progressively developed from these more or less dwarfish aborigines, just so little does such a kind of explanation suit the connection of the Veddás with the Siŋhalese. As they have not descended from the Siŋhalese by regressive degeneration, neither surely have they been transformed by progessive evolution into Siŋhalese. That no such simple affinity exists is proved chiefly by the difference in the form of the face, to which all observers testify.

In truth, it was just the form of the face which caused all the earlier travellers to associate the Siŋhalese with the Europeans. Even Knox, as I have already mentioned, was of the opinion that no people in the world were so exactly like the Siŋhalese as the people of Europe. Cordiner asserts this quite as distinctly, calling attention particularly to the features, which means the face. If so fine an observer as John Davy, instead of this, says the Siŋhalese are wholly Indian, we can only conclude that all these designations point to the common Aryan character of the face. With Davy this is the less to be doubted since he speaks explicitly of the "Asiatic" form of the Siŋhalese skull (that is, of the capsule of the skull); when, directly to the contrary, almost all observers ascribe to the Veddá face a foreign and very frequently Dravidian type, it becomes clear that genealogical investigation must make the face a main object of study. If we now go back to the history there can be no doubt that *the Siŋhalese face is an importation from the Aryan province of the Indian continent.* The Rámáyana, as well as the Wijayo legend, affords direct confirmation of this. The latter, however, conveys at the same time an earnest warning not to be too one-sided in this opinion, for it speaks distinctly of an importation of Tamil women from "Mabar," from whom the king himself and his followers took wives.

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If my view be correct *that the Veddás are a pure blooded, the Sinhalese a mixed race*, we may then leave the question out of consideration as to how far Ceylonese intervention, especially soil, food, and climate, has operated to determine the formation of the body. I wish only to touch briefly upon a few facts, the knowledge of which is not without significance in regard to this question. Even in the old document ascribed to Palladius, the sheep upon Taprobane are spoken of: "Oves illis crinitæ omnesque absque lana, lac suppeditant ubertim, latis caudis conspiciendæ (πλατείας ἔχοντα οὐράς).

Sir E. Tennent,* nearly two thousand years later, made the same observation in Jaffna; the sheep of the place had long hair, like goats, instead of wool. A similar influence of climate upon the hairy covering of the sheep is also testified of other places. It is asserted† that the native cats of Ceylon have an inferior appearance; they are said to be small, with thick close-clinging hair, little heads, retreating foreheads, but great pointed ears.‡ Any one disposed to assume a like influence of climate upon men might conclude that human beings also, especially the aborigines, who have dwelt longest upon the Island, have undergone a like change: for example, that the hair was originally woolly, the head and entire body larger. Then might approaches be sought to woolly-haired blacks, to Andamanese and Negritos, to Melanesians and even Africans. Before admitting such great alterations,

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* Tennent, *l. c*, II., p. 531. "The finest sheep in Ceylon are reared upon the dry plains which overlie the limestone and coral rock, on the northern and western coasts. These sheep, instead of being coated with wool, are covered with long hair, resembling that of goats, and the horny callosities that defend their knees, and which arise from their habit of kneeling down to crop the short herbage, serve to distinguish the Jaffna flocks from those of the other portions of the Island." I do not find it said that these sheep have fat tails.

† Charles Darwin. The Variation of Animals and Plants in the State of Domestication. Translated from the English by V. Carus. Stuttgart, 1868, vol. I., p. 122; vol. II., p. 339.

‡ *Id.*, vol. I., p. 57.

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however, the facts must be assured. The story of the native cats deserves a more strict inquiry; it rests at present upon the solitary testimony of a botanist (Mr. Thwaites). The metamorphosis of the sheep, however, seems more firmly established, as it is supported by the authority of two wholly independent witnesses, separated from one another by quite a long interval of time; but it is confined, according to Sir E. Tennent, to a comparatively small district in the extreme north. Hence it appears to me we should hesitate before making an application of these experiences, gathered from the history of domesticated animals, to the savage inhabitants of Ceylon; at any rate until it is proved that the latter actually possessed in earlier times different physical characteristics. The present state of the hair plainly corresponds to the ἀπλότριχα of Palladius, and must therefore have been just as it now is for at least fifteen hundred years.

It is very certain that if we would pursue the search for the origin of the Vẹddás genealogically we must first turn our investigations to the savage, or half-savage tribes of India. This once clearly settled, room enough will still remain for conjectural anthropology. Even now speculation has gone pretty far. Mr. Hyde Clarke* brings the Kolarian and other further Indian tribes in connection with the African negroes; Col. Kincaid† places the Bhils with the Mongols; and Mr. Keane‡ strikes the Malays wholly out of the series of independent races, and believes the Caucasians to have penetrated in pre-historic ages not merely to further India, but even so far as Polynesia. It may be of service that such questions should be seasonably presented, especially at a time when the dying out of the savage races is imminent, and admonishes us to hasten the investigation. But after the questions have awakened interest, the warning must be reiterated not to draw any definite conclusions until a greater

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* Journal of the Anthropological Institute of Great Britain and Ireland, 1878, vol. VIII., p. 49.

† *Id.*, 1880, vol. IX., p. 406.

‡ *Id.*, 1880, vol. IX., p. 258.

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amount of facts have been collected. First of all then, great stress must be laid on the importance of enlarging by every possible effort the ethnology of the Indians, in order to be able to investigate radically the tribe of "black-skins." Since a part of the Dasyu were transferred to the Sudras, and consequeutly included in the caste system of the Hindús, as the Veddás in that of the Siṇhalese, it is not even possible to bring to a conclusion the physical anthropology of the Hindús and the Siṇhalese until we have resolved the evidently very composite group of the Dasyu into its separate members. One such member is plainly the tribe of the Veddás. Their natural isolation upon an island has perhaps tended to preserve in them, rather than in related races upon the continent, their peculiar character, and made them an object by which to test the admissibility of the theories concerning the origin of the black Indians.

May the zeal of the observer know no flagging, that before the utter extinction of this already much depleted race, the language and customs, the physical and mental constitution, of the Veddás, may be in all particulars firmly established.

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TABLES OF MEASUREMENTS.

I.—Skull and Face Measurements.

		Vedda's. 1 ♀	Vedda's. 4 ♀	Vedda's. 5 ♂	Sinhalese. 1 ♂	Sinhalese. 2 ♂	Sinhalese. ? 3 ♀	Tamils. 1 ♂	Tamils. 2 ♂	Tamils. 3 ♂
Capacity	cub. cm.	1,250	1,025	1,360	1,110	1,200	1,250	1,155	1,260	1,200
Greatest length	mm.	177	165	185	178	181	172	175	179	170
Greatest breadth	”	125·5	133	135	127	127	132	126	134	128
		Ps.°			Ps.	Pi.	Pi.	P.	P.	P.
Vertical height	”	129	121	137	129	132·5	133	139	132	137·5
Auricular, meatus audit. to vortex ...	”	107	104	120	113	106	116	116	113	117
Horizontal circumference ...	”	485	465	508	482	493	472	477	490	473
Trans. vertical circumference ...	”	283	286	300	298	293	305	305	308	305
Sagittal circumference, frontal bone ...	”	120	115	134	119	124	121	117	134	130
Length of sagittal suture ...	”	115	108	140	125	130	125	132	120	122
Sagittal circumference, squama occipital	”	110	109	114	110	111	103	110	97	100
Whole sagittal arch	”	345	332	388	354	365	349	359	351	352
Inferior frontal diameter ...	”	95	91	93	93	92	88	88	92	88
Temporal diameter	”	107·5	110	117	93	103	102	108	115	104
Parietal diameter, *tubera* ...	”	119	123	120	122	116	123	115	120	122
Occipital diameter	”	102	100	99	103	101·5	103	101	103	95
Mastoideal diameter, end ...	”	96	94	103	96	98	93	105	95	93
Mastoideal diameter, *basis* ...	”	110	111·5	122	115	115	111	120	119	112
Auricular diameter	”	100	108	108	97	103	95	106	115	106
Horizontal length of occiput ...	”	50	46	60?	53	54	52	48	42	46
Distance of nose-root from *foramen magnum*	”	92	91	90	99	97	92	100	97	95
Distance of root of the nose from the ear opening	”	96	94·5	99	102	101	95	101	104	99
Distance of nasal spine from *foramen magnum*	”	81	—	—	96	86	83	91	87	88

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Distance of nasal spine from ear opening	„	95	—	—	105	101	93	102	103	101
Distance of alveolar edge from *foramen magnum*	„	86	—	—	105	82 !	83	90	92	93
Distance of alveolar edge from ear opening	„	100	—	—	100	101 !	96	107	111	107
Distance of chin from *foramen magnum* ...	„	114	—	—	—	—	—	—	—	—
Distance of chin from ear opening ...	„	92·5	—	—	—	—	—	—	—	—
Height of face, A (from nasal root to chin)	„	101·5	—	—	—	—	—	—	—	—
Height of face, B (from nasal root to alveolar edge)	„	61	—	—	59	58 !	151	62	66	63
Breadth of face, A (jugal) ...	„	122	—	—	112	120	07	120	—	118
Breadth of face, B (*sut. zyg. max.*) ...	„	87	—	—	97·5	87	83	90	—	101
Orbits, height	„	33	—	—	30	34	30	32	35	32
Orbits, breadth	„	39	—	—	39	41	36	38	42	37
Nasal height	„	48	—	—	45	51	36	45	45	47
Nasal breadth, aperture ...	„	24	—	—	26	23·5	20	22	23	25
Palate, length	„	48	—	—	53	45 !	38	49	48 !	49
Palate, breadth	„	36	—	—	40	33 !	33	36	36 !	43
Distance maxillary angle ...	„	85	—	—	—	—	—	—	—	—
Distance maxillary joint ...	„	—	—	—	85	87	81	90	92	89
Facial angle	degrees	82	—	—	75	75	76	76	76	75

II.—Indices Computed.

Length to breadth index ...	mm.	70·9	80·6	73	71·3	70·2	76 7	72	74·8	75·3
Length to height index	„	72·9	73·3	74·1	72·5	73·2	77·3	79·4	73·7	80.9
Breadth to height index	„	103·5	90·9	101·4	101·5	104·3	100·7	110·3	98 5	107·4
Auricular index	„	60·4	63	64·9	63·5	58·5	67·4	66·3	63·1	68·8
Middle facial index	„	50	—	—	52 6	—	47·6	51·6	—	53·4
Orbital index	„	84·6	—	—	76·9	82·9	83·3	84·4	83·3	86·4
Nasal index	„	50	—	—	57·7	46	55·5	48·8	51·1	53·1
Palatal index	„	75	—	—	75·4	—	86·8	90	—	87·7

* The mark P. signifies that the greatest breadth was taken at the parietal; Ps. at the *tubera* (upper parts); Pi. at the lower parts.

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